Note Sec. II = typo for V. 76, Apr '27-Sep '27

TWO SECTIONS—SECTION 1

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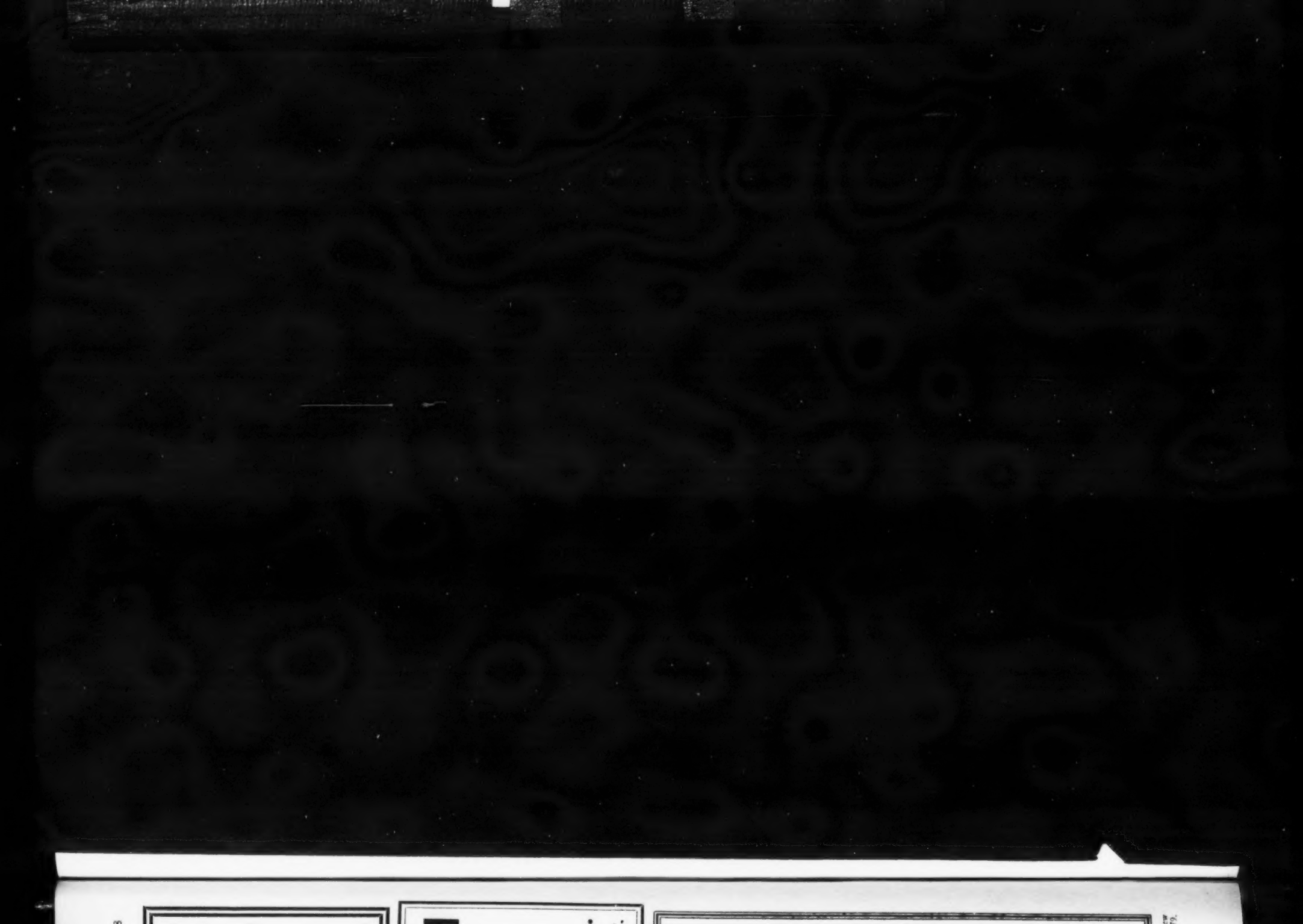

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Abolition of Rubber Restriction

G. E. PERRY
F. R. HENDERSON CORPORATION

ON April 4, the result of the official inquiry into the effect of the operation of rubber restriction was announced by Prime Minister Baldwin in the following reply during question time in the House of Commons: "The Government has received the report of the Committee of Civil Research on the question of rubber restriction and it has decided that all restrictions on the export of rubber from British Malaya and Ceylon will be removed on the 1st of November, 1928, the existing scheme being continued unaltered in the meantime."

Mincing Lane received this information shortly after three o'clock and being unprepared for a decision of this nature, the price of rubber dropped to 10 pence a pound, under the pressure of heavy selling orders. The announcement was considered a bold move on the part of Premier Baldwin as it was far more drastic than had been anticipated by any or all concerned.

On October 21, 1927, the Colonial Office on behalf of the Government made the following statement: "It is officially announced that it is not proposed that any change be made on November 1 next in the regulations which at present govern the export of rubber from Ceylon and Malaya. The governments of the territories concerned will be asked to overhaul the machinery of the scheme with a view to increasing the efficiency of its working. The governments are being consulted on the question whether any, and if so, what alterations are required in the regulations now in force. If it is considered that any changes are necessary, full right is reserved to make them as from February 1, 1928, as long notice being given as may be practicable in the circumstances.

On February 1, 1928, the Colonial Office announced that "the percentage of standard production of rubber which may be exported at the minimum rate of duty from Ceylon and Malaya for the quarter beginning 1st of February would be 60."

In view of the previous announcement it was generally believed that no changes would be made in the scheme during that restriction year. However, on February 8, the following unexpected announcement was made: "The Prime Minister has asked the Committee of Civil Research to consider the operation and effects of the temporary restrictions now in force on the export of rubber from certain territories in the Empire, and to consider the question whether these restrictions should be continued in their present form, modified or removed, and to submit recommendations both as to the policy to be adopted and as to the steps to be taken to carry it into effect. The proceedings and report of the committee will be confidential. No changes will be made in the existing scheme pending the consideration by the government of the report of the committee."

This announcement being so unexpected caused a drop in this market from 37½ to 34½ cents with a further drop to 28½ cents during the next two weeks. It was generally conceded that restriction would ultimately be removed but a modification of the present scheme would be in force in the meantime.

During February, at the request of the Colonial Office, the British plantation rubber growers held meetings in order to obtain opinion on the problems with which the industry was faced. In Malaya the general consensus of opinion was in favor of retaining the Restriction Scheme with certain necessary modifications, but Ceylon passed a resolution that was forwarded to the Secretary of State asking for the abolition of restriction.

A committee of Dutch rubber growers, formed on March 1 to look after their interests, decided to get in touch with foreign producers and American consumers. This committee was to visit England with this in view, but a committee of the British Rubber Growers' Association asked them to postpone their visit to England until the Civil Research Committee had made its report. It was not expected that the report would be made for some time as the investigation was to be very comprehensive. However, on April 4, Premier Baldwin, in answer to a question in the House of Commons, made the statement that restriction would be abolished on November 1, 1928, and the present scheme would remain unaltered in the meantime. The break in the market which followed was quite sharp and the price of rubber dropped 6½ cents per pound on the New York Rubber Exchange, the decline, however, was orderly on account of frequent profit taking. It proved to be a record day on the Exchange when 8,985 tons changed hands.

Abroad the news was received with dismay, it was a second shock received from the Prime Minister. It was referred to as "a complete bombshell" owing to its brevity and drastic character. The London *Financial Times*, on April 7, published the following:

"On every hand the sudden and drastic nature of the decision is condemned, the only redeeming feature being that there may now be a possibility of prevailing on the Dutch Planters to cooperate in some plan for controlling and stabilizing rubber prices. Messages from Malaya, Ceylon, Singapore, Shanghai, New York, Washington and Brazil all indicate that the statement came as a great surprise to rubber interests and that its effect will be far reaching."

Commenting on the Restriction Scheme, a well-known firm of London brokers, said in part: "The matter having been now disposed of there is no object in hesitating to apportion the blame for the apparent failure of the restriction scheme to the proper quarter. The scheme clearly had inherent weaknesses from its inception, and therefore required the most careful handling. Since the untimely death of Lord Stevenson the government has made almost every mistake it was possible to invent .....

"The government in connection with the scheme has been like a ship without a rudder, altering its course with every change in the wind, and following no settled plan. It has been weak where it should have been strong, it has yielded to mob clamor when it had justice on its side and the support of all the best elements of the trade."

Mr. Ormsby-Gore, the Under-Secretary of State for the Colonies, gives the following reasons for the withdrawal of restriction, "The chief factors were the pivotal price and the disagreement between Malaya and Ceylon, the increasing use of reclaimed rubber, and supply and demand in relation to free trade." He suggested the organization of a selling pool and urged the development of higher yielding trees as measures to combat the effects of the abolition of restriction.

The Committee of Dutch Rubber Growers has visited England and has met the British Rubber Growers, but apparently no agreement has been reached. There have been rumors of an Anglo-Dutch selling organization, which would attempt to hold the market at remunerative levels, but nothing definite has been accomplished as yet.

The effects of the removal of restriction will be far reaching as stated above. Soon after April 4, the day of the announcement, plantation managers were instructed by their home offices to tap freely. This means there will be an accumulation of rubber ready to be shipped on November 1 when the restriction is lifted. At the present time, there is about five months' visible supply of rubber on hand in the world. With the increased shipments after November 1 this supply will increase. In all probability with continued low prices, the native production will fall off as it will not pay them to tap their trees under existing conditions. A certain amount of reclaimed rubber will be replaced by crude with a continuance of low price levels. To what extent this replacement will reach is a difficult question to answer. Some believe that it will amount to 50,000 tons per year. It could easily amount to that figure.

Since the announcement of the proposed abolition of restriction, a number of guayule factories in Mexico have closed, presumably owing to the low price levels of crude rubber.

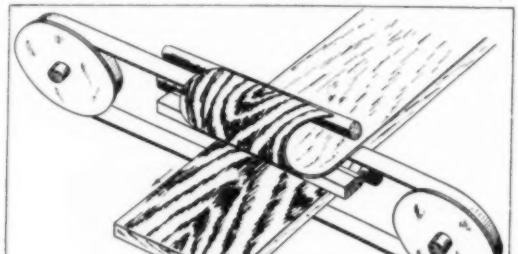
The off grades of plantation rubber will tend to disappear as being uneconomic to prepare.

A prolonged period of low priced rubber will stimulate new uses for the product and thereby increase the world's consumption.

All of these factors will tend to modify the drastic effects of capacity production, and help to prevent world stocks from becoming too unwieldy.

Grained Rubber

The production of rubber articles in variegated colors, especially those having a wood grain effect in their color design is possible by a new and simplified method.[1] Briefly this consists in producing a slab of vulcanized rubber compounds of different colors in which the compounds have a structural relation closely approximating that of the differently colored portions of wood. This relation can be secured



Cutting Grained Rubber

effectively and inexpensively by passing the differently colored compounds simultaneously through an ordinary tubing machine by feeding them into the machine in narrow strips or slabs consisting of one colored strip superimposed upon the other in registry face to face. Fed in this association the screw of the tubing machine works them into the desired grain structure and discharges them as a flat band. Strips of this band are then vulcanized in a hydraulic press to prepare them for cutting into layers of desired thickness.

The method of cutting and indication of the grain effect produced is shown in the illustration.

The apparatus indicated comprises a pair of driven rolls adapted to compress and drive forward the slab and an endless belt knift adapted to slice the slab as it emerges from the nip of the rolls. The slicing of the slab exposes its internal structure as a surface design. This, by reason of the somewhat but not entirely uniform action of the extruding machine screw upon the stocks, imitates very closely the appearance of wood grain.

[1] U. S. patent No. 1,663,275.

Rubberized Multi-ply Fabrics

A sulphur-free rubber solution containing barium sulphate 5 per cent and zinc oxide 10 per cent is used for cementing and waterproofing multi-ply fabrics. Sheets of such material as paper, silk, and various cloths are united with such solution, the layers being pressed together and heated to 140-160 degrees C.

Rubber Compounding Practice[1]

Mineral Colors for Rubber Goods—Metallic Oxides and Sulphides Resistant to Hot Cure with Sulphur

WEBSTER NORRIS

COLORS in rubber goods signify nothing as to their quality or serviceability. They have, however, an important bearing on sales values by reason of the pleasing effects they make possible. This feature has special bearing in rubber surfaced weather-proofed clothing, novelties, and numerous articles in druggists' sundries and surgical goods.

Until the recent development of low temperature cures admitted the possibility of employing organic colors, the chief reliance of the compounder in color was upon a few metallic oxides, sulphides, etc., that are able to resist the action of sulphur in long, high-heat cures. The list of such pigments comprised oxide of iron, oxide of chromium, the sulphides of antimony, arsenic, cadmium, mercury and zinc, supplemented by ultramarine. Red lead, litharge, lead chromate and white lead were all unavailable for rubber pigmentation. However, all but lead chromate had value as curing agents, but all of them darken in hot vulcanization by the formation of black sulphide of lead.

The color effects possible with the mineral pigments named are greatly restricted. The iron oxide and antimony sulphide reds are still essential and highly regarded in the rubber industry. In rubber goods the first color in popular regard is a red with orange values such as one observes in the skin of a Califonia navel orange, matched by a recently developed pure sulphide of antimony. Below are described in detail the sources, nature and color characteristics of mineral rubber colors.

MIXINGS FOR COLORED MECHANICAL RUBBER GOODS

RED SHEET PACKING

Smoked sheets	17.50
Zinc oxide	33.50
Paris white	37.00
Lime	0.75
White substitute	5.00
Pure red oxide	**3.00**
Sulphur	3.25
	100.00

Cure in open steam wrapped in fine sheeting on drum, 70 minutes at 260° F. Strip from liner while warm.

BLUE SHEET PACKING

Smoked sheets	20.0
Asbestine	44.0
Barytes	20.0
Zinc oxide	8.0
Ultramarine blue	**6.0**
Sulphur	2.0
	100.0

Cure in open steam wrapped in fine sheeting on drum, 70 minutes at 260° F. Strip from liner while warm.

GREEN MOLDED SOFT RUBBER

Smoked sheets	45.00
Hard clay	15.00
Calcite whiting	15.00
Dark chromium oxide	**18.00**
Zinc oxide	4.25
Sulphur	1.25
High speed accelerator	0.10
D. P. G.	0.40
Degras	1.00
	100.00

Press cure 10 minutes at 298° F.

RED MOLDED SOFT RUBBER

First latex crepe	36.0
White substitute	4.0
Dark Crimson Antimony (10-12% free Sulphur)	**8.0**
Red oxide of iron	**6.0**
Zinc oxide	10.0
Lithopone	34.0
Lime	0.5
Accelerator, Hexa	0.5
Sulphur	1.0
	100.0

Cure 10 minutes at 287° F.

Antimony Reds

Antimony sulphide or sulphuret is the general term applied to all grades of precipitated antimony trisulphide and antimony pentasulphide. These sulphides are sometimes produced with free sulphur and certain inert substances, mainly calcium sulphate and calcium carbonate.

Antimony sulphide is obtained from the mineral stibnite. It is also obtained from antimony trioxide. Stibnite is found in many parts of the world but at present supplies are derived chiefly from China, South America and Mexico. Antimony trioxide is produced from various antimony bearing ores. The method of making antimony sulphides follows.

The precipitation of antimony sulphides is effected by the addition of an acid to a solution of an antimony salt. The precipiation is sometimes obtained by the reaction between antimony chloride and calcium or sodium thiosulphate. Purity of raw materials, temperature and concentration, all play an important part in this reaction, the control of which requires considerable technique.

Precipitated antimony sulphides, specific gravity 3.30, accelerate the vulcanization of rubber except in the presence of most organic accelerators. In certain compounds these sulphides delay aging to a marked degree, a complete explanation of which has not been given. The better qualities of antimony sulphide rank in particle size with the finely divided compounding ingredients and disperse exceedingly well in rubber. When used in sufficiently high percentages it imparts a characteristic soft "feel" to the cured stock as well as a clean bright attractive appearance. The colors obtained range from a light orange to a deep crimson.

The color cost, based on the best grades of antimony sulphide, is slightly cheaper than the best dyes but this does not hold with iron oxide. Hexa, DPG, DOTG, Heptene and Tuads are some of the organic accelerators which do not effect adversely the color of antimony. The better grades of antimony work well with zinc oxide up to percentages as high as 20 where inferior grades fail completely from the color standpoint. During the past few years many rubber factories abandoned the use of antimony for various reasons but recently its use has increased considerably. One producer claims regular consumption of this product in 61 different factories during the first half of 1927.

Golden antimony is the term generally applied to antimony pentasulphide. However, on account of its inferior coloring value and its varying stability, its use has been decreasing.

Crimson antimony is the trade name for antimony trisulphide. It is made in every shade from a light golden to a deep crimson, free from sulphur and all adulterants. In a large number of rubber factories it is being used regularly on account of the beautiful appearance that can be obtained by very small percentages in the compound. In some instances antimony is used to insure free flowing in the mold before

[1]Copyright, 1928, by Webster Norris. Continued from INDIA RUBBER WORLD, April 1, 1928, pp. 59-61.

the stock begins to set up. This behavior is very marked in the presence of certain accelerators whose action is slightly retarded by antimony. In some compounds antimony protects against aging to a marked degree. Some grades are practically as fine as carbon black and this great fineness accounts for the remarkable covering power of stable varieties in compounds where there are no other ingredients which change the antimony by chemical action upon it.

Crimson sulphide is compatible with all inert fillers, softeners and anti-oxidants. However, it has a slightly retarding influence on many accelerators although it works very well with Hexa, DPG, DOTG, and a number of the newer accelerators as well.

Specifications and Tests

Antimony sulphide should be bought on the basis of its antimony sulphide content. Free sulphur content should always be specified. The material should contain less than 1 per cent moisture and be acid free. The difficulties arising from color variation are generally eliminated by specifying to the producer a given color that shall result from a given test compound.

Antimony sulphides are prepared with varying proportions of free sulphur, the amount of which is always stated by the manufacturer. In preparing rubber mixings the compounder should always take into account the free sulphur in the antimony pigment and regulate the total sulphur of the rubber mixing accordingly. Following is the summary from a published communication of the Rubber Research Association of London.[2]

1. Carbon bisulphide, provided it be subjected to previous purification, is a satisfactory solvent for the removal of sulphur.

2. The accepted method of determining free sulphur in antimony sulphide by extracting the original sample with carbon bisulphide fails to take account of (*a*) the decomposition of the higher sulphide which occurs under the conditions employed for the vulcanization of rubber; (*b*) any sulphur present in the amorphous form; or (*c*) the pronounced fixation of free sulphur shown by certain samples of pigment between 120 and 150 degrees C.

3. It is suggested that the "available sulphur" should be determined by extracting with carbon bisulphide after the pigment has been heated to 150 degrees C. for five hours in a slightly alkaline atmosphere.

MIXINGS FOR TUBES, NOVELTIES AND DIPPED GOODS

RED INNER TUBE

First latex crepe	76.5
Golden antimony, 18-19% free sulphur	**20.0**
Zinc oxide	2.0
Hexa	0.5
Anti-oxidant	1.0
	100.0

Cure in open steam 90 minutes at 282° F.

YELLOW LEAD CHROMATE OR CHROME GREEN PIGMENTS FOR SOFT MOLDED RUBBER

First latex crepe	100.00
Zinc carbonate	6.00
Sulphur	2.70
Low heat accelerator	1.75
Lead chromate or Chrome green	**3.00**
	113.45

Cure 10 minutes at 287° F. Non-blooming.

RED DIPPED ARTICLES

Rubber	50.0
White substitute	5.0
Crimson antimony, sulphur free	**18.0**
Paris white	25.0
Zinc oxide	1.0
Lime	0.5
Hexa	0.5
	100.0

Acid cure.

YELLOW DIPPED ARTICLES

Rubber	50.0
White substitute	5.0
Arsenic yellow	**15.0**
Paris white	28.0
Zinc oxide	1.0
Lime	0.5
Hexa	0.5
	100.0

Acid cure.

Natural Red Oxides

Red oxide of iron is obtained from the varieties of iron ore known as hematite and limonite. These are natural oxides, red, brown or yellow, the colors varying with the percentages of water of constitution. The reds are hematites, browns are part hematite and part limonite, the yellow natural oxides are limonites. Umbers and siennas are chiefly limonite with the addition of manganese. The red and brown colors derived from these natural oxides are obtained by grinding the roasted ores.

Artificial Red Oxide

The best red oxides are those made by calcination of copperas or ferrous sulphate. This first artificial red oxide was made in Nordhusen, Prussia. In 1792 a plant was erected in Bohemia for producing red oxide of iron from copperas. The industry was later established in England and the United States for the manufacture of all types of artificial iron oxides. The copperas used is derived either from weathered pyrites or from ordinary scrap iron dissolved in sulphuric acid and the ferrous sulphate crystallized out. Copperas is also a by-product from steel wire and sheet steel mills, being crystalized out from spent pickle liquor.

Copperas or ferrous sulphate contains a large percentage of water of crystalization, which is expelled by drying before the material is calcined in a specially constructed furnace. The lighter or yellower tones of red oxide are burned at relatively low temperatures while the deeper color oxides are burned at considerably higher heat. The furnace is so constructed that the dry copperas can be frequently stirred as a constant supply of air is passed over it delivered by a fan blower.

After the copperas has been completely converted from the ferrous to the ferric state and the desired color reached, the charge is dumped from the furnace, cooled and thoroughly levigated, first with weak solution of sulphuric acid to dissolve out any unoxidized ferric iron compounds, and then with water. Subsequently the washed oxide is filter pressed, dried and ground. Properly processed red oxide should show only a trace of soluble sulphate.

The Indian red and maroon oxides are made in a similar manner as the pure red oxides, except that the copperas is burned at a higher temperature for a longer period of time.

Tuscan reds are produced by the addition of a permanent organic coloring matter, such as alizarine lake, etc.

Pure artificial red oxide should test 98 per cent sesquioxide of iron, be absolutely free of acid and manganese and on a 300-mesh screen not have over 0.5 per cent residue. Its specific gravity is 5.15.

Venetian Red

Venetian reds are pure oxide of iron combined with various amounts of calcium sulphate. Two processes of maufacture are used: (1) lime and copperas are combined in molecular proportions and burned together; (2) pure red oxide is mechanically mixed or diluted with completely burned gypsum or plaster of Paris.

A Venetian red containing 80 per cent of calcium sulphate has a specific gravity of about 3.50.

Vermilion

Vermilion is sulphide of mercury. It is a strong permanent crimson red commercially available in three variations of color designated as pale, orange pale and deep crimson. Its use in rubber is practically limited to hard rubber and

[2] "The Determination of Available Sulphur in Golden Sulphide of Antimony." B. D. W. Luff and B. D. Porritt. *Chem. & Ind.*, Vol. XI, No. 23, Dec. 15, 1921, pp. 275T-278T.

to cement for painting trademarks, etc., on cured articles. Its specific gravity is 8.20.

Ultramarine Blue

Ultramarine blue is an artificial product prepared by heating a mixture of clay, charcoal, sodium carbonate and sulphur. The product thus obtained is similar in composition and properties to the natural mineral, lapis lazuli. Various tints are obtained by varying the method of preparation and the ingredients employed. It is practically the only blue pigment of mineral origin suitable for rubber work cured by hot vulcanization. However, its color is destroyed in contact with acids with the evolution of hydrogen sulphide. Its specific gravity is 2.35.

Chromium Oxide Green

Chromium green, specific gravity 4.95, contains 98-99 per cent chromium oxide. It is a strong permanent blue green pigment and can be had in light, medium and dark tones. Its color remains unaltered under all methods of vulcanization and is proof against change of color by acids or alkalies. In stability of color chromium oxide green is equal to red oxide of iron. Both colors are particularly adapted for floor tiling and other severe duty purposes where contact of acids and alkalies is liable to occur.

Chromium oxide green rubber goods are not found in many lines aside from tiling and certain molded specialties such as pencil erasers, and small molded articles. In novelties balloons, bathing caps and raincoats the organic greens are commonly used.

Chrome Green

Chrome green simulates the green color of chromium oxide but contains no chromium oxide. It is a mixture of yellow chromate of lead and Prussian blue with specific gravity about 3.77. Chrome green of medium tone averages 21.8 per cent ferrocyanide of iron and 78.2 per cent chromate of lead. Light tones contain less of Prussian blue and the darker tones more. This color is not suitable for hot cured goods although it can be used in rapid low temperature vulcanization. Practically, however, it is not used as a rubber pigment.

Yellow

Arsenic yellow, or arsenic tri-sulphide, has a specific gravity of 3.46. Formerly it was the usual yellow pigment for vulcanized rubber because its color is not changed by sulphur in vulcanization. In current practice this color is used chiefly in dipped goods stocks, particularly for yellow balloons. Arsenic yellow of English manufacture is the staple quality for rubber work. Although poisonous, its presence in dipped goods is not found to be injurious to health because it is insoluble in water and acids.

Cadmium sulphide, specific gravity 4.58, is the strongest and brightest mineral yellow obtainable. It is made by precipitation direct from an acid solution of the metal and its color is not changed by vulcanization, alkalies or acids. In rubber work this color is employed chiefly in the varied line known as novelties, such as bathing caps, variegated inflated balls, etc. It is also suitable for floor tiling where dashes of bright yellow are used in mottling. About a ton of cadmium sulphide is used annually in the American rubber industry.

Zinc yellow, chromate of zinc and potassium, specific gravity 3.98, is a permanent pigment of light lemon color unaffected by vulcanization. It is little used because of its lack of strength compared with cadmium sulphide or cadmium lithopone.

Chrome yellow is basic lead chromate, specific gravity 6.12. Its color is bright canary yellow. Formerly it was not available for use as a rubber color because in ordinary high heat cures it is completely darkened by the formation of black sulphide of lead. The development of low temperature, rapid cures has made chrome yellow available as a rubber pigment of limited use. A yellow compound containing this color is included among the typical rubber mixings.

Cadmium lithopone possesses clear and brilliant color in different grades of lemon and gold yellow. These colors contain approximately 30 to 35 per cent of cadmium sulphide. The specific gravity of both of these colors is about 4.42. They possess light tinting strength and resist sundarkening and alkalies. Both are very stable in either hot or cold vulcanization. The chief use of cadmium lithopone yellows in rubber goods is in novelties, toy balloons, bathing caps, etc. Either the lemon or golden grades may be employed where a good clear permanent yellow is desired.

Ochre is the name given to a clay that is colored a dull yellow by the infiltration of hydrated oxide of iron, which varies in amount from 12 to 20 per cent, with gravity running from 3.00 to 3.20. The color of ochre is permanent but is not much esteemed in rubber work because of its dullness and lack of strength.

Test for Color Strength

The color strength of a pigment, meaning its ability to impart color to a rubber mixing, depends chiefly on its particle size or degree of fineness. In other words, the more finely divided the pigment, the greater its coloring effect.

It is frequently desirable to determine the relative economy of two pigments by a comparison based on their money equivalent weight. This weight is determined for any lot of samples under consideration by calculating how much of each is obtainable at a given price. The lowest quotation is selected as the price. The calculated amounts are carefully weighed out on a sensitive scale. One weighing to grains answers very well. Uniform amounts of white lead paste ground in oil are next weighed, one for each color sample, and placed at convenient distances apart on a sheet of glass. Each money equivalent weight of color is thoroughly rubbed up with one of the weighed lots of white lead paste. In this way a series of tinted leads will be obtained with color sufficiently diluted to show plainly the variations in strength of the original colors.

To express the differences quantitatively, all the samples must be brought to the same tint by the addition of weighed amounts of lead to the stronger samples, and the percentage variation of color strength determined with reference to one sample as standard.

The following example will serve to illustrate the method of figuring a test: Two pigments of the same color, *A* and *B*, are to be compared. *A* costs six cents a pound and *B* eight cents. The money equivalent portionate weights therefore will be for *A*, four parts and for *B*, three parts for the same money. Weigh out samples of *A* and *B* in these proportions—say 20 grains of *A* and 15 grains of *B*—and thoroughly mix each one with one ounce of white lead paste. Comparing the resulting colored pastes suppose sample *B* is strongly enough colored to require another ounce of lead paste to reduce it to match sample *A*, it follows that *B* is 100 per cent stronger than *A* on the basis of money equivalent weight. In other words, a pound of *B* at eight cents will give as much coloring effect as two pounds of *A* costing twelve cents—or an actual saving in favor of the higher priced color by reducing the amount required.

A modification of the above test is frequently used to obtain qualitative color strength comparisons. It is commonly called a bleach or let down test and is executed by rubbing up twenty grains of dry zinc oxide to one grain of color with a sufficient number of drops of linseed oil to wet the mixture to a stiff paste.

Synchronous Motor Drive *For* Rubber Mill Lines

A. S. RUFSVOLD

General Engineering Department Westinghouse Electric & Manufacturing Company

ALTHOUGH synchronous motors were originally introduced for the improvement of power factor, recognition of other advantages of this type of motor for rubber mill line drives has resulted in its general adoption, even in plants where power factor correction is no longer a consideration. The improvement of power factor, with its allied benefits, is alone sufficient reason for the use of the synchronous motor, but today such motors are being installed on rubber mill lines in plants where the operating power factor is already near unity and no advantage can be gained by further power factor improvement. The synchronous motor, then, must have other important advantages, aside from power factor improvement, which give it such a strong place in the rubber industry today. Among the most important of these additional advantages are the following: (1) High efficiency over wide range of load, (2) adaptability for direct connection to low speed line shaft, and (3) utilization of dynamic braking for emergency stopping. The dynamic braking feature, which has come into wide favor in recent years, will be given particular attention in this article.

In order to be successfully applied, any motor must have torque characteristics suitable for meeting the starting as well as the running requirements of the load. The earlier synchronous motors, particularly the low speed type, did not have sufficient starting torque to handle conditions of starting under load with rubber in the rolls, so clutches were included in the drives, together with some type of brake arrangement for quick stopping in case of emergency. In these early drives the clutch served a double purpose, since it was used not only for starting, but also for disconnecting the motor from the line when the brake was applied for an emergency stop. Later, when it was found that dynamic braking could be successfully employed for emergency stopping, the clutch and brake were no longer required for safety purposes and could therefore be eliminated, provided synchronous motors of high starting torque characteristics could be obtained.

Electrical manufacturers were readily able to meet the demand for such motors in the high speed class (around

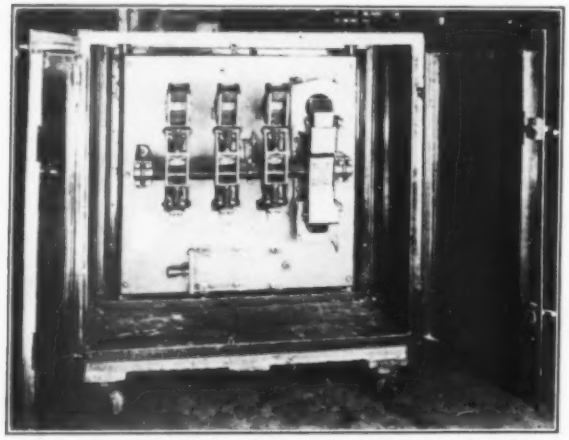


Fig. 2. Cabinet Containing Contactor Unit which Provides Dynamic Braking Feature

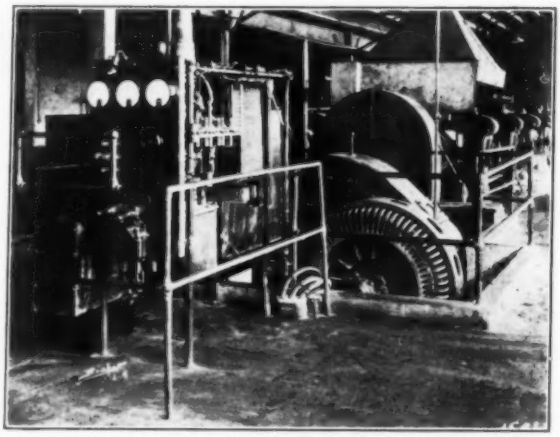


Fig. 1. 350 h.p. 500 r.p.m. Synchronous Motor Driving 3-84-Inch Mills

600 r.p.m.), which in its present form is capable of developing starting torque equal to full load torque even when started on reduced voltage; but the development of suitable low speed motors for direct connection to the line shafts (around 100 r.p.m.) was not so easily realized, since the latter type of motor has inherently a low starting torque. However, recent improvements in the design of slow speed synchronous motors have resulted in the development of motors entirely suitable for direct connection to mill lines, these motors having starting torques in excess of full load torque when started on full voltage. Equipped with dynamic braking control, such motors are now being successfully applied without clutches or brakes.

In laying out a mill line today, there exists a choice between two types of synchronous motor drive, one being the high speed motor for use with gear unit, and the other, the slow speed motor for direct connection to the line shaft. No clutches or brakes will be required in either case, since the motors can be designed to handle the starting conditions, and the emergency stopping problem is nicely solved by the use of dynamic braking control. In comparing the two types of drive, it will usually be found that the cost of the low speed motor is approximately equal to the cost of the high speed motor with gear unit, and the overall efficiency will be about the same in either case, assuming that modern helical cut gears will be employed with the high speed motor. The choice between the two type of drive will probably be determined in most cases by such factors as floor space, cost of installation, maintenance, and starting kv-a.,

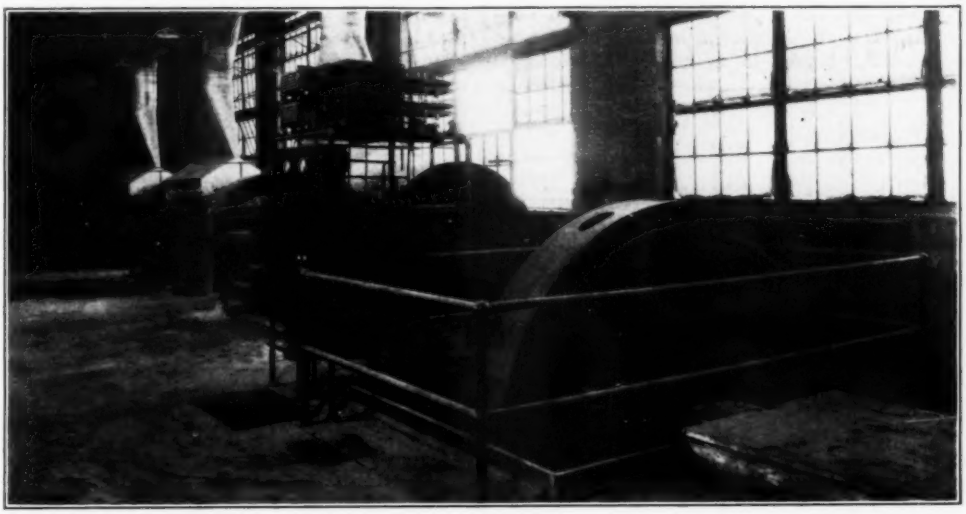


Fig. 3. 600 h.p. 120 r.p.m. Synchronous Motor Driving a Line of Rubber Mills

rather than first cost and overall efficiency of the drive.

With the slow speed type of motor it is necessary to use full voltage starting in order to get at least full load starting torque, but with a high speed motor it is possible to get starting torque of the same order on reduced voltage. In cases where starting kv-a. is a limiting factor, it should be recognized that for the same percentage of full load torque on starting the slow speed motor will draw considerably more starting kv-a. from the line than the high speed motor. However, starting kv-a. is usually not a limiting factor except in the smaller plants where the starting current drawn by a larger motor is a considerable portion of the total plant load. The present tendency for drives above 400 h.p. is toward the use of slow speed direct connected motors, but for the smaller drives, the high speed motor with gear unit is usually preferred.

Figure 1 shows a typical mill line installation consisting of 3-84-inch mills driven by a 350 h.p., 500 r.p.m., 80 per cent p.f., 440 volt, 3 phase, 50 cycle synchronous motor with suitable gear unit and flexible couplings. The motor is of the ordinary cast frame type of construction, equipped with two pedestal bearings and bedplate. In this case, reduced voltage starting is used, the motor developing approximately 125 per cent of full load torque when started on the 80 per cent voltage tap of the auto transformer. The manually operated starter is shown in the foreground of Figure 1 with the dry type auto transformer mounted at one side. The panel includes a double throw starting and running oil switch, field knife switch, field rheostat, and the usual indicating instruments.

In the rear of the panel is mounted the cabinet containing the contactor unit which provides the dynamic braking feature. Figure 2 is an open view of the contactor unit which is of three-pole double throw construction, closed in the lower position by gravity. In the normal running position the upper contacts are closed and the motor is connected to the line in series with the oil switch. The highest degree of protection is afforded the operator because when the safety switch on the mill is opened the contactor is immediately released from the upper position, and assisted by high spring pressure on the upper contacts it falls quickly to the lower position by gravity. The action of the contactor causes the motor to be disconnected from the line and with the closing of the lower contacts a suitable resistance is connected across the motor terminals. The motor is thus brought to rest quickly and smoothly by generator action, the energy being dissipated in the braking resistance. The coil on the lower part of the magnet is energized by the voltage generator during braking and prevents any tendency of the contactor to bounce, also holds the contacts tightly closed until braking is completed. The two-pole double throw knife switch shown below the contactor provides a means for reversing the motor in case of emergency.

A typical high speed motor installation has just been described, and at this point we turn our attention to a consideration of low speed equipment. Figure 3 shows a rubber mill motor of the type for direct connection to a mill line shaft, the rating being 600 h.p., 120 r.p.m., 100 per cent p.f., 2,200 volt, 3 phase, 60 cycle. This motor develops a starting torque of 115 per cent of full load torque when started on full voltage.

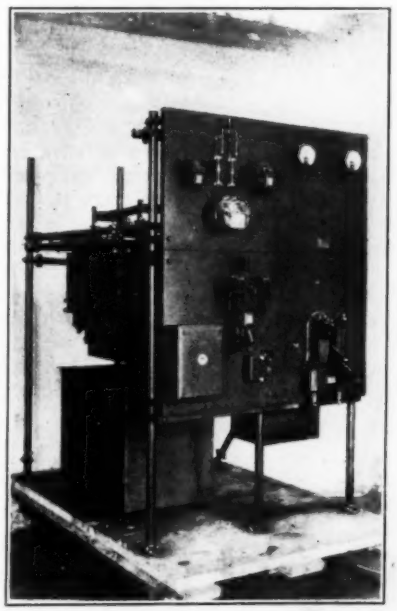


Fig. 4. Control Equipment for Slow Speed Motor

It is of interest to note that the motor shown in Figure 3 was constructed by means of electric arc welding, utilizing standard rolled plate and H-beam section. The bearing pedestals constitute the only major castings used in its construction. The bedplate was also fabricated from standard H-beams and plates and is so arranged that the stator of the motor may be shifted sufficiently to uncover the rotor for purposes of inspection and minor repair. Electric arc welding is now being used extensively in the construction of synchronous machines and motors of the fabricated type have been found highly satisfactory in industrial service.

The control equipment for the slow speed motor is shown in Figure 4. This controller is of the full voltage

starting push button operated type arranged for manual reversing. The double throw contactor, shown mounted in the rear of the panel, is similar to the one shown in Figure 2, except that in this case the contactor is immersed in a tank of oil for 2,200 volt service. Operation of the "start" button causes the contactor to close in the upper position which connects the motor to the line on full voltage. Dynamic braking is obtained in the same manner as described previously for the case of the 440 volt unit. (Figure 2.)

The use of such a contactor unit for full voltage starting and dynamic braking results in a controller of extreme simplicity, which is evident from the small number of relays mounted on the panel. The panel includes a control circuit knife switch, A.C. low voltage relay, and D.C. low voltage relay, definite time accelerating relay, field contactor, thermal overload relay, and induction timing relay for removing field excitation after dynamic braking. On the right hand side of the panel are mounted the alternating current line ammeter, D.C. field ammeter, manually operated double throw oil switch for reversing, and provision is made for the addition of the motor field rheostat.

The simplicity of control equipment of the full voltage starting type is now becoming widely recognized, and the result is an increasing tendency to start motors directly across the line. Not only are low speed synchronous motors being started by this method, but the practice is spreading to high speed motors as well. For example, one rubber mill has several 400 h.p., 600 r.p.m. motors all starting on full voltage, another plant a 700 h.p., 600 r.p.m. motor, still another plant a 500 h.p., 1,200 r.p.m. motor, etc. Provided the power system will stand the resulting starting peak, such practice is highly desirable in rubber mills because not only is the control apparatus simplified but the full starting torque of the motor is thereby made available.

In selecting equipment for mill line drive, safety to the workmen should be given foremost consideration because of the great hazard involved in the milling of rubber on open rolls. In order to be considered safe, a scheme of dynamic braking should not depend upon a contactor which must be closed electrically by a coil and magnet, but its operation should be positive by means of gravity or spring action. The important feature of the dynamic braking contactor which has been described is that it is closed in the lower or braking position by gravity and is, therefore, not dependent upon the control circuit or control voltage for its operation. If during normal running conditions a failure should occur in the control circuit the contactor will operate and the motor will be immediately stopped by dynamic braking.

In considering the very remote possibility of an accident occurring at the same instant or immediately after total failure of power, it is of interest to note that in the average plant a satisfactory stop by dynamic braking will be obtained in such an emergency due to the fact that the stored energy of the motor generator sets or rotary converters will usually be sufficient to maintain the excitation during the brief time interval required for braking. If the failure of power is confined to the alternating current feeders supplying the motor in question, there will be no interference whatever with the dynamic braking action. In either case, if the power failure occurs before the safety switch is operated, the motor will be automatically stopped by dynamic braking.

For the benefit of those unfamiliar with dynamic braking, it might be said that a quick stop, well within the recommendations of the recently published "Safety Code for Rubber Mills and Calenders" is obtained without appreciable shock or strain on any part of the equipment. Since the braking torque is transmitted through the flexible medium of the magnetic field of the motor, a "cushioned" effect is obtained, and the stop is not accompanied by any mechanical strain or jar. Neither is the motor subjected to any abnormal electrical or magnetic stresses, since the current peak during braking is less than the current peak on starting. It should also be recognized that since most of the stored energy of the drive is in the rotor of the motor where the braking torque is applied, very little torque is transmitted through the shaft and gears during braking. A most important advantage of dynamic braking is that practically no maintenance is required, whereas considerable maintenance and adjustment is necessary in the case of the usual mechanical braking apparatus to maintain satisfactory stopping.

Engineers in the rubber manufacturing industry are ever seeking means of utilizing electrical equipment to the best advantage. The improved torque characteristics and excellent operating performance of present day synchronous motors, together with power factor benefits and the utilization of dynamic braking for emergency stops, have all played their part in the now established practice of applying synchronous motors to rubber mill line drives.

Analysis of Reclaim Tonnage

Its Importance As a Factor Affecting Crude Rubber and Manufacturing Interests

The rubber reclaiming industry is a most important division of the rubber industry, both economically and technically, for the reason that its products are virtually indispensable. Reclaimed rubber is thus a doubly essential factor with a practical bearing on rubber production and manufacture.

An analysis of the reclaim tonnage used in the American rubber goods industry in 1927 is attempted in the table given below:

RECLAIM CONSUMED IN THE UNITED STATES AND CANADA IN 1927

Type of Reclaim	Net Rubber Content, Per Cent	Reclaim Used, Per Cent	Used in 1927, Tons	Equivalent Rubber Content, Tons
Auto tires	50	80	140,000	70,000
Inner tubes	65	10	17,500	11,375
Shoes	25	3	5,250	1,312
Miscellaneous	20	7	12,250	2,450
Totals		100	175,000	85,137

For the purpose of this analysis reclaim is subdivided into four types, namely, tires, tubes, shoes, and miscellaneous, which are listed above in the order of relative tonnages consumed. These types contain different but reasonably constant average net rubber contents. The figures shown in the first column of the table are stated as found in representative reclaiming practice. In the second column the percentage proportion of each type of reclaim is estimated and shows the great preponderance of tire reclaim used in the industry, being four times that of all the other grades of reclaim combined.

From these percentages were derived the individual tonnages of each type included in the 175,000 tons total reclaim consumed in 1927. Likewise, the equivalent net tonnage of rubber content represented by each type was figured from its amount used and respective per cent of net rubber content given in the first column.

While these figures are not in any sense official, they are considered sufficiently near the truth for practical conclusion that by consuming 175,000 tons of reclaim in 1927 American rubber manufacturers were indebted to reclaimers for the equivalent of 85,000 tons of crude rubber exclusive of its contents of carbon black and mineral rubber at an average price of something like ten cents a pound. Beside this they profited by the value of the carbon black, mineral rubber and other reinforcing, plasticising and inert filling ingredients virtually without cost.

Removing Machinery Vibrations

Rubber Under Tension Insulates Machine Vibrations in the Factory and Home

INDUSTRIAL machinery can be divided roughly into two classes, commercial and domestic. In either case the machine is actuated by mechanical movements, which, due to rotation or reciprocation of parts, set up undesirable vibration. Vibration means a shortening of life both for the machine and its component parts and also the bed upon which it is supported, and all other units which may receive the vibration by transfer through this bed. Vibration also means noise.

In the case of commercial machinery, efforts have been made to cushion the machine from its base or support. A slab of rubber has been used. Layers of specially prepared cork have also been tried. These are steps in the right direction. Rubber shock insulation is the culmination of these attempts and affords complete insulation of the vibration of the machine from its support. The very fact that numerous attempts have been made to absorb the vibration of commercial machinery is proof of the desirability of complete insulation. However, the life of the machine and building are considered paramount and the attendant noise of lesser import. Now that thermostatic controls have reached their present state of perfection and reliability, machines which heretofore were used only in the commercial field, are being exploited for domestic applications.

Principle of Rubber Shock Insulation

Rubber shock insulation of machinery is based on two important facts. First each leg of the machine is embedded in rubber which entirely insulates it from the rubber casing and support to which this casing is fastened. There is no contact between the leg and the casing except through rubber. Where the base of the machine is continuous the rubber assemblies are fastened at several points. Second, the rubber is forced around the leg of the machine and into the rubber casing under pressure. The rubber is displaced into spaces provided in the casing to receive the flow of rubber. The description and photographs following will give a better understanding of the construction and functioning of the assembly.

The parts used in one assembly are pictured in Figure 1 which clearly shows the seven different parts and the manner in which they are partly assembled. In Figure 1 the two cap screws *G* are tightened only until the rubber begins to be compressed. The gap between the housing *A* and cap *F* represents the amount of compression in height on the rubber. The parts are assembled ready to be applied to the unit to be shock insulated by the following procedure: First, the lower rubber part *B* is placed in lower housing *A*, as shown at *H*. Second, the upper rubber part *E* is forced over the foot *D*, as shown at *I*. Upper and lower parts are placed together, the circular base of the foot *D* entering the recess in lower rubber *B*. The cap *F* is next slipped over the threaded portion of *D* before the two adjusting nuts *C* are assembled. Finally the housing *A* and cap *F* are drawn together with cap screws *G*, as at *J*. in Figure 1.

The rubber parts are smaller in diameter than the housing and cap into which they fit; also the radii on the corners of the rubber parts are larger than the corresponding radii in the corners of the housing and cap, allowing space for the displaced rubber to flow. The remaining two holes which pass through bosses on both the housing and cap are for anchoring the entire assembly to the base upon which it will rest.

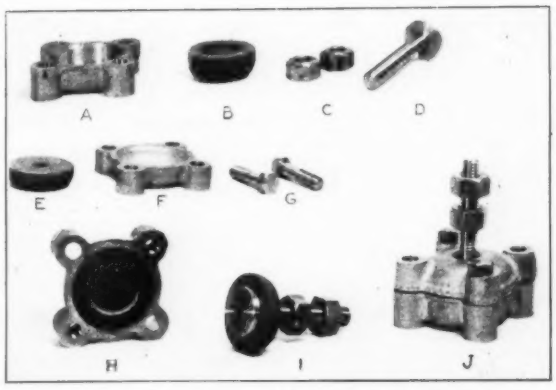


Fig. 1.—Parts of Rubber Shock Insulators

Thus the foot is embedded in rubber that entirely insulates it from the housing and cap, and the structure of every portion of the rubber has been forced into a shape differing from that which it had before assembly. Rubber in this state is extremely sensitive. It can also be seen that any shock load transferred to the lower rubber, from the mechanism to which the foot is attached, will result in the further displacement of this rubber with the consequent partial relief of the tension in the upper rubber. However, the energy momentarily stored in the lower rubber is almost immediately given up, due to the properties of the rubber until the two rubber parts are again in static balance. High frequency vibration of low amplitude is dampened completely by the rubber shock insulators, and such vibration is not passed on to the floor or wall to resound throughout the building.

When a vibrating mechanism is mounted rigidly to a wooden structure, the poorest results are obtained, as wood makes the very best sound board for the amplification of sound. Rubber insulators are of the most benefit in such a case. When the vibrating mechanism is mounted on a concrete structure, the condition is improved. The consequent noise of vibration is not amplified, neither is it diminished, or prevented from being transferred to other machines and sections of the building. Rubber shock insulators take care of this because rubber has the property of deadening the noise of any shock or vibration of such frequency or amplitude that is not actually absorbed by it. Rubber will not do any of these things, however, unless it is applied in an enclosure under compression, as there must be constant transfer of displacement from one section of the rubber to another to achieve these results. This keeps the entire structure of the rubber in continual action and lengthens its usefulness.

Another reason for the success of the rubber insulators is the fact that the mechanism so mounted is firmly anchored through a cushion. A vibrating mechanism not anchored down will gradually liberate itself from its original position and there will not be complete absorption of the vibrating noise. In any mechanism such as refrig-

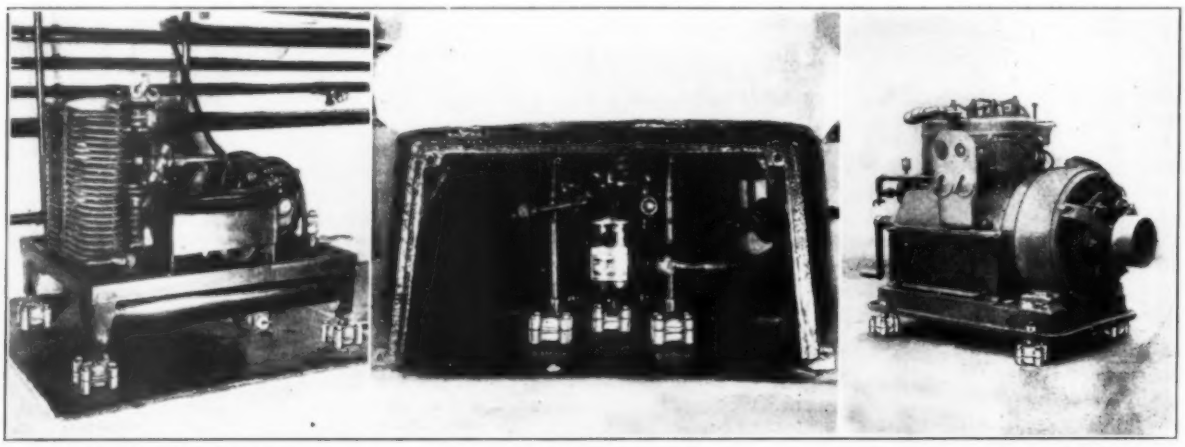
erator units and the like, unless the frame work is made tremendously heavy in proportion to the entire weight, there is bound to be distortion set up in the frame and parts supported, unless they are set in rubber insulators. These rubber assemblies allow enough give to enable the frame to find its natural position.

The conventional refrigerating mechanism illustrated at *A* in Figure 2 is mounted on four rubber shock insulators. A raised concrete base was cast level for mounting this machine, but was not absolutely necessary as the threaded portion of the feet, which extend into the rubber, are provided with two nuts for adjusting the height for leveling.

B in Figure 2 represents an oil burning unit in what was the ash-pit of the boiler. This unit is mounted on three rubber shock insulators. Even in this instance remarkable results have been obtained. Here the major noise is that of the combustion of the fuel, and is dependent on the size and shape of the boiler and passages, the stack and flue. The adjustment of oil, air and the dampers also has some effect. It remains then to minimize any additional noise set up by the apparatus used including that of motors, pumps and controls. With these quieted down the only appreciable noise will be a very slight rumble or tremor in the chimney.

The automatic pump is insulated from the wall with rubber, as well as the connecting pipes.

In Figure 2 at *B* rubber shock insulators are shown at five points on the base of a motor generator outfit. This functions as a lighting plant on a power yacht; also for furnishing electricity for various other purposes. In an installation of this kind vibration-proofing is extremely important. The major power plant is mounted in the center of the boat, and the lighting plant is usually placed at one side. With this arrangement, any vibration from the generating set is greatly aggravated due to this offset position, and also to the lack of a solid foundation for such a heavy unit. Usually it is fastened to a number of light ribs which transmit the tremor throughout the boat with much discomfort to the passengers. Rubber shock insulation is an absolute essential in eliminating the transfer of destructive vibration from the generating set to the wooden structure.



A—REFRIGERATING MACHINE B—OIL BURNING UNIT C—MOTOR GENERATOR OUTFIT

Rubber Shock Insulators Are Used Extensively to Dampen Machinery Vibrations

THE TOTAL OUTPUT OF RUBBER IN SOUTHEASTERN ASIA, including Burma, Siam, and French Indo-China in 1910 was but 180 tons. That of the French territory alone in 1927 was 8,798 tons.

Educational Rubber Experiment

Showing How Rubber Is Coagulated, Compounded and Vulcanized

The United States Rubber Co., through its Educational Department, 1790 Broadway, New York, N. Y., is making it possible for teachers to demonstrate to their pupils some interesting facts about rubber, its preparation, compounding and vulcanization. To accomplish this the company furnishes enough material for two experiments to be performed by the teachers according to detailed instructions contained in a bulletin accompanying the materials. The first experiment illustrates the coagulation of rubber latex by the use of vinegar. The next two steps following coagulation, in the preparation of rubber, namely, the drying and breaking down on a mill are briefly explained in the text. Following this the second experiment illustrates mixing and vulcanization.

The compounding ingredients supplied are contained in capsules and consist of suitable proportions of sulphur, zinc oxide and accelerator. A broken down soft sample of crude rubber is also furnished. This is compounded with the dry materials on a small wooden hand mill loaned by the company. The mixing operation is fully detailed as is also the experiment of vulcanizing the mixture. This is performed by boiling the mixing for twenty minutes in a vessel of boiling water.

These experiments prove intensely interesting to learners, young or old, who are not informed about rubber, its properties and cure.

Transparent Rubbers Spot Shoes

Investigating the spotting of chrome leather women's shoes through the use of transparent rubbers, Rudolf Ditmar in Germany found that the spots were evidently due to the decomposition by water of traces of sulphur chloride used in vulcanizing to hydrochloric acid. The latter releases chromium trioxide from the chromates, and by oxidizing the rubber the chorium trioxide is reduced to a dioxide and producing the characteristic dark metallic green discoloration of the leather. The remedy he proposes is to treat the vulcanized rubbers with ammonia or a suitable colloidal dusting agent, or to substitute hot curing for the sulphur chloride process.

Pulley Band Tire Building Process

A review of the patent literature relating to building pneumatic tires by the pulley band or flat band process

JOSEPH ROSSMAN

THE pulley band process of building tires has been adopted by many manufacturers on account of its speed and efficiency. The apparatus for carrying out this process is very simple as compared with the complicated mechanism used in building tires on a metal core having the shape of the tire. The latter type of machine, moreover, requires a skilled workman to manipulate the tire fabric and to shape it properly by means of stitchers and other tools. The pulley band process has obtained its name from the use of a flat drum or pulley band in building the tire.

The first step of the process is to cut the various plies of tire fabric of the desired width and at the required angle. The tire fabric that is mostly used today is weftless or cord fabric which is made by rubberizing a plurality of parallel cords as they are held under tension. This fabric is cut by a bias cutter and applied around a collapsible flat drum. The ends of the strip are abutted together to form a complete band without overlapping. A second strip is laid on with the cords running at an angle to the cords of the first ply. The desired number of plies, usually six in number, are then applied with the cords of each layer at an angle to the cords of the adjacent layer. Steel bead wire cores are placed at each side of the superposed plies on the drum, and the plies of fabric are turned over the beads by means of a suitable tool. Two plies of breaker strips spaced apart by strips of rubber are then laid on the drum and finally the tread rubber is applied producing the complete flat tire band.

All these operations are carried out on a drum which is power driven and under the control of the operator. The various tire materials are applied and stitched together without being put under any tension or strain. The drum is then collapsed and the pulley band casing is removed and shaped to tire form by any suitable mechanism after which it is vulcanized. This process gives a tire with the cords uniformly tensioned and with uniform flexibility. As the band is shaped on the shaping machine every unit in the tire is under the same amount of tension and takes its natural position during the shaping process.

An early U. S. Patent No. 518,112 issued in 1894 shows that bicycle tires have been built on a collapsible drum. This patent also shows pivoted arms adjacent the drum carrying various tools operating on the tire material. A British patent No. 20,951 issued in 1899 shows a collapsible building drum having grooves to receive the beads. The tire material is first placed on the drum, the beads are then positioned and the edges of the fabric are turned over the beads.

The problems in building the present day tire are, however, entirely different and required considerable inventive thought in order to solve them. The patents relating to the flat band process have been issued only within the past ten years. Their objective appears to be the production of tires by quick and simple manipulation and the elimination of as many steps as possible so as to reduce the expense of production. An example of efficient production is illustrated in patent No. 1,442,653 where a long cylindrical drum is

Courtesy, U. S. Rubber Co.

(1) REMOVING FLAT BUILT TIRE FROM DRUM. (2) PLACING TIRE IN VACUUM SHAPER. (3) BEGINNING OF EXPANDING OPERATION. (4) EXPANDING FINISHED TIRE. (5) INSERTING CURING BAG. (6) REMOVING EXPANDED TIRE AND BAG. (7) APPLYING CURING RINGS. (8) PLACING TIRE IN CURING MOLD.

used having a plurality of spaced bead receiving grooves. The width of the tire fabric used is equal to the width of four or more tire casings. The multiple tire blank is completely built and then severed into separate tire blanks.

In the Hopkinson patent No. 1,374,505 the inner tube which is used to shape the flat tire band is partially cured before it is used in the inflating machine. The tube is retained in the shaped tire band and vulcanized at the same time as the tire casing. The shaped tire blank and inner tube are removed as a unit, being held in shape by locking rings. In patent No. 1,289,767 the inner tube is not used and fluid pressure is applied directly to the inner face of the casing.

Tire Shaping Machines

A number of machines have been developed for shaping the built up tire blank. The early patents shape the tire blank by mechanical means. Patent No. 1,312,505 shapes the tire blank by a series of rotatable disks contacting with the inner surface of the pulley band. The early Hopkinson patents such as No. 1,317,657 and 1,374,505 shape the tire by an inflatable tube. The recent patents shape the tire blank by means of vacuum applied to its outer surface. The flat tire band is placed in an annular box of U shape in cross section having an open inner face. The tire band is placed with its outer face against the open face of the box and is suitably sealed at its ends. The box is then connected to a vacuum system. The section on the pulley band draws it into the box and this shapes it into tire form. With this apparatus the tire can be shaped with great rapidity and almost instantaneously. The inner face of the tire is entirely free so that a vulcanizing tube can be inserted with ease.

Types of Building Drums

The drum on which the tire blank is built consists of a number of segments which can be readily collapsed after the tire blank is built so that it can be easily removed. A very simple collapsible drum is shown in patent No. 1,374,505. Other quick collapsible types of drums have been patented where the drum is collapsed by pulling a lever. The building drums have also been provided with bevelled edges so as to facilitate the positioning of the beads as in patent No. 1,242,073. A drum has been made from a series of flexible plates which are flat during the building operation and can then be flexed to shape the tire. A long cylindrical drum is disclosed in patent No. 1,442,653 for building a multi-blank band at one time.

Tire Building Units

The core tire building machines are usually complete units having independent tire material supply sources and working tools adjacent the core for convenient and fast production. Similar units have been developed for building flat tire blanks. The British patent No. 216,230 for instance shows a building drum, fabric supply and guides and a number of applying tools adjacent the drum.

The recent patents granted for building tires indicate that the objective of the manufacturers is to eliminate all lost motion in the production of tires and reducing the building operations to the minimum number of steps. The new machines consequently reduced the time for building a complete tire and increased the output of each operator.

Patents

The patents relating to the flat band process of building tires have been briefed and are given in chronological order.

1. Moore, 518,112. April 10, 1894. Bicycle tires are built on a collapsible drum which is power driven. A series of stitching tools is provided to swing over the drum.

2. Knadler, 525,711. Sept. 11, 1894. A pulley band is built by first applying a rubber tread to a flat drum, applying the fabric layers and vulcanizing the whole and turning the band inside out.

3. Richardson, 537,361. Apr. 9, 1895. A tube is formed and placed on the periphery of a drum, wrapped with fabric and rubber and vulcanized in flat condition without internal pressure.

4. Clark, 539,353. May 14, 1895. An endless band of bias fabric is made and stretched on a mandrel having a greater circumference than the endless band. The remaining tire materials are applied and vulcanized on the mandrel.

5. Richardson, 539,707. May 21, 1895. A sheet of rubber is stretched on a drum, layers of fabric are placed upon it, the edges of the layers are folded until they meet to form a tube. The tube is vulcanized in flattened condition.

6. Straus, 548,673. Oct. 29, 1895. Strips of rubber and fabric are cemented to a tube in flat condition and vulcanized. The edges of the strip are folded around the tube.

7. Doughty, 567,457. Sept. 8, 1896. Pneumatic tires are made by bringing together the ends of superposed strips of fabric and rubber to form a ring, bringing the edges together and vulcanizing to form a tube.

8. Wood, 571,820. Nov. 24, 1896. A flat tire blank is built up with the edge of one layer projecting beyond the edge of the next layer. The blank is folded to unite the projecting edges of the layers.

9. Jeffery, 607,245. July 12, 1898. A complete tire is built on a drum having grooves for the beads.

10. Knadler, 654,900. July 31, 1900. An endless tube is formed which is partially inflated and rolled upon a band of covering fabric.

11. Lefferts, 709,021. Sept. 16, 1902. A complete tire blank is built up and the longitudinal edges are united. It is vulcanized in a water bath at 212 degrees to form a bicycle tire.

12. Palmer, 744,394. Nov. 17, 1903. A single tube tire is made by building a tube and then rolling it over a drum so as to cover the tube with fabric.

13. Smith, 745,300. Nov. 24, 1903. A machine for making pneumatic tires consisting of a rotary drum adapted to receive superposed strips of material and an adjacent turntable carrying a fabric supply as well as various operating tools.

14. Smith, 753,813. Mar. 1, 1904. A tire making machine comprising a drum on which is rolled an annular tube about which is wrapped the tire material by the rolling action. The tube is rolled by a reciprocating elastic band.

15. Harris, 1,162,479. Nov. 30, 1915. An endless band having bead rings incorporated therein is shaped on an inflated airbag. The remaining tire materials such as breaker strip and tread are applied and the whole vulcanized in a mold.

16. Tew, 1,242,073. Oct. 2, 1917. A layer of fabric is placed in a collapsible drum having inwardly bevelled edges, beads are placed on the bevelled edges, a second ply of fabric is applied overlapping the beads, the drum is collapsed and the pulley band shaped and completed.

17. McLeod, 1,250,917. Dec. 18, 1917. Cords are wound on a drum to produce an annular web, beads are applied at the edges and the band is shaped to tire form.

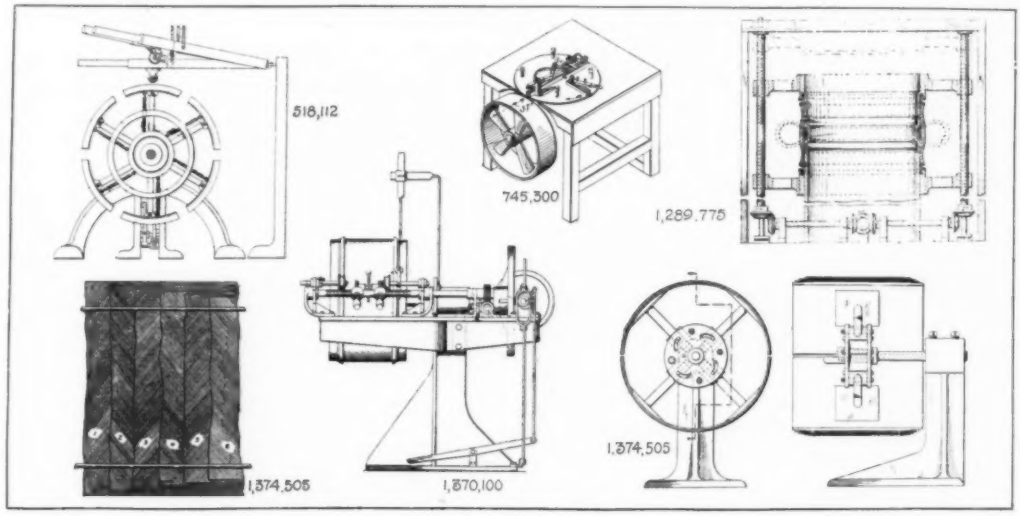
18. Renner, 1,259,289. Mar. 12, 1918. An endless band of cord fabric having bead rings therein is built and shaped into a tire.

19. Wayne, 1,266,361. May 14, 1918. Tire fabric is wound on a drum having a semi-circular body portion and sloping edges with grooves to receive beads. The fabric is folded over the beads which have been placed on the fabric.

20. Hopkinson, 1,289,767. Dec. 31, 1918. A complete band is built having its central portion of smaller diameter than the finished tire. The casing is partially expanded by an inflated tube placed in a mold and further expanded until the tire size is attained and then subjected to fluid

pressure in direct contact with the casing while it is vulcanized.

21. Hopkinson, 1,289,775. Dec. 31, 1918. An apparatus for shaping a pulley band comprising movable flanges for engaging the edges of the band and moving them toward each other on a drum carrying an inflatable tube which serves to shape the band.



22. Carlisle, 1,294,330. Feb. 11, 1919. Cord fabric is wound helically around two spaced apart bead rings, a rubber tread is applied and the assembly shaped to tire form and vulcanized. An analogous process and tire is disclosed in patent No. 1,345,994, July 6, 1920.

23. Hopkinson, 1,305,801. June 3, 1919. A pulley band is shaped by means of sand and an inflatable tube while held in a mold.

24. Hopkinson, 1,310,701. July 22, 1919. A tire building machine comprising a flat expanding arm contracting cylindrical drum for supporting a flat pulley band, bead positioning guides adjacent the drum and means for supplying the tire material to the drum.

25. Hopkinson, 1,312,505. Aug. 5, 1919. A pulley band is shaped by a series of rotatable disks applied at its inner central portion.

26. Hopkinson, 1,317,657. Sept. 30, 1919. The flat pulley band is shaped into a tire casing by placing the band on a cylinder which supports an inflatable tube. When the tube is inflated the band assumes a tire shape.

27. Carlisle, 1,345,998. July 6, 1920. A tire casing is shaped by an airbag which is united to the casing during vulcanization.

28. Dykes, 1,370,100. Mar. 1, 1921. A machine for building a complete pulley band comprising a rotatable cylindrical drum and various stitching and applying tools placed adjacent one side of the drum.

29. Hopkinson, 1,374,505. Apr. 12, 1921. The method consists in wrapping a plurality of fabric plies around a drum, the ends of each layer being at an angle to the ones of the adjacent layer, placing beads at the edges of the band, folding the edges of the pulley band over the beads, forming the pulley band into tire shape and vulcanizing.

30. Sloper, 1,399,898. Dec., 1921. An endless flat tire band is removed from the building drum by suction applied to its outer surface by an annular member contacting with the band at its edges so as to seal it. Other apparatus for performing the same mechanical functions are disclosed in the three following patents: No. 1,477,391, Dec. 11, 1923; No. 1,487,035, Mar. 18, 1924; No. 1,487,036, Mar. 18, 1924.

31. Hopkinson, 1,410,309. Mar. 21, 1922. Apparatus for shaping a pulley band into tire shape comprising means to expand the medial portion of the band while its edge portions approach each other. A fixed abutment for one edge of the band, a movable abutment for the other edge.

32. Lough, 1,418,662. June 6, 1922. A pulley band shaping machine having telescoping drums and abutment members shiftable to clear the drums.

33. Hoover, 1,435,895. Nov. 14, 1922. Before application of the beads the cord fabric is stretched, the beads are applied, the tension is relieved and the fabric is folded over the beads.

34. DeMattia, 1,442,653. Jan. 16, 1923. A machine for building up a plurality of pulley bands on one drum comprises a long cylindrical drum having a plurality of spaced grooves to receive beads. When the band is completed it is severed between the adjacent beads to form separate pulley bands. The process is claimed in patent No. 1,428,419, Sept. 5, 1922.

(To be continued.)

House Kills Pool Purchase Bill

After considerable debate the House defeated by a vote of 181 to 120 the Newton bill which would authorize the rubber and automobile industries to pool their interests and purchase their crude rubber as a unit without infringing the Webb-Pomerene Export Act.

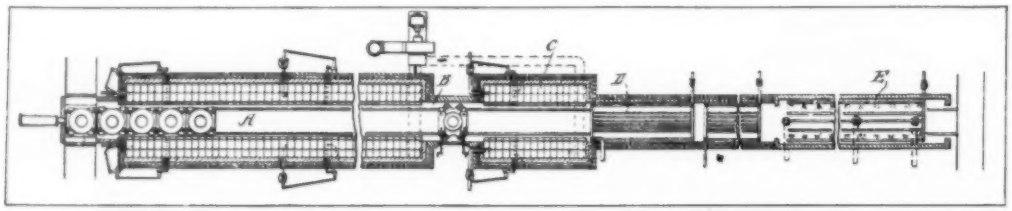
Representative LaGuardia, of New York, charged that a pool was already in existence and was composed of the Goodyear, Goodrich, Firestone, Fisk, Kelly-Springfield, Ajax, U. S. Rubber, General Motors, Willys-Overland, Studebaker, Dodge and Packard companies.

As an aftermath to the bitter debate which resulted in the defeat of the bill, Representative Jacobstein, of New York, demanded a full investigation by the Federal Trade Commission of the methods followed by the rubber industry in buying crude rubber abroad, declaring that evidence had been disclosed that a pool does exist and is now operating. "I assume," he said, "that if the findings in such an investigation show that such a pool is operating contrary to the law, the matter will be brought to the attention of the Department of Justice."

Continuous Tunnel Kiln Vulcanizer

Curing Tires in Molds

The admitted advantages of economy inherent in a successful method of continuous vulcanization are sought in a comprehensive invention,[1] the mechanism of which is designed for curing such rubber articles as automobile tires, boots and shoes, rubber cloth, etc. The procedure consists in passing the articles to be cured, whether enclosed in molds or not, slowly and continuously through an elongated heating and vulcanizing chamber in such manner that each rubber article is more or less gradually heated up and is subjected to the heat for the necessary period of vulcanization. In vulcanizing tires in molds provision is made for compressing the molds together without withdrawing them from the vulcanizing chamber. This is done at a point in the chamber when the tires are well heated up.



Sectional Plan of the Dressler Apparatus for Continuous Vulcanization

The apparatus here shown in somewhat sectional plan was particularly designed for use in vulcanizing rubber tires in molds. It comprises a tunnel kiln composed of the following successive sections or zones; a preliminary heating zone *A;* a mold compressing zone *B;* a secondary heating zone *C;* a curing or soaking zone *D;* and a cooling zone *E*. The tires with their molds are moved through the kiln by means of cars running on track rails. Each car is adapted to hold six tires with their molds which are stacked up one on top of another. The tire carrying cars are inserted into an ante chamber at the entrance end of the kiln whence they are moved into the preliminary heating zone of the kiln by a hydraulic pusher. The latter serves thus also to advance the train of cars filling the kiln a car length ultimately ejecting each car of cured tires from the cooling end of the kiln.

On either side of section *A*, the preliminary heat is supplied from hollow tile walled gas combustion chambers arranged with ventilating channels so that the heat generated in the combustion chamber causes the circulation of the kiln atmosphere through the pathway of the goods. The supply of fuel is automatically regulated in response to the temperature conditions within the kiln.

The mold pressing zone *B* is of sufficient length to permit the incorporation of a mold press which receives a car of tire molds and applies the closing pressure.

The secondary heating zone *C* is substantially identical in construction with section *A* except it is ordinarily shorter.

The curing or soaking section *D* is provided with steam pipes at the sides, top and bottom running lengthwise of the kiln. They are arranged in sections with headers at their ends each with its separate controlling valve and outlets for condensation.

At the sides and top of the cooling zone *E* are provided water spray pipes running lengthwise of the kiln. From these, water is discharged on to the mold and is withdrawn through an outlet.

This apparatus and its method of operation is quite unusual. Whether it is ever reduced to practice in rubber goods manufacture or not it outlines the problem of continuous vulcanization and introduces novel methods of construction and procedure.

[1] U. S. patent No. 1,662,804.

Rubber Stars in Movies

Studio wizards studying possibility of substituting small flexible dummies for screen players

Encouraged with the artistic success of rubber miniatures in representing prehistoric monsters in the Brazilian jungle scenes in the motion picture play, "The Lost World," some Hollywood producers of movies are figuring on the possible employment of small rubber models in a similar way to serve instead of players.

In an article published in the September, 1925, issue of this journal, it was explained how the photographed rubber figures were projected on the screen as gigantic creatures apparently able to amble about, breathe, fight and gash one another, and to execute many other lifelike movements. Those masters of illusion, the ingenious "prop" men, who fabricate the most incredible creations for the films, are confident that with the experience gained since "The Lost World" was staged a couple of years ago they can not only equal the effects obtained with animal figures but surpass them with others representing men and women screen folk.

Through a clever use of double exposure, the cinema photographers, it is said, could at their convenience even introduce such figures into a picture without other or living players being aware of the interpolation until it is revealed on the silver sheet, and also blend the grouping so that few spectators would ever realize that unreal characters were taking part in a scene.

It is stated that rubber manikins could be made to do at least all that is depicted by characters in animated cartoons, and could be photographed in a practically endless variety of poses, bent, twisted, and so activated as to register almost the whole gamut of emotions. It is also held that they could make peculiarly satisfactory "doubles" for actors required to play in positions involving hazard or fatigue.

The suggestion is made, too, that the rubber figures may even take the place of temperamental stars, whose illness, disabilities, etc., worry employers under contract to produce pictures within a limited time. The use of the figures for publicity "still" pictures is obviously practical, and it is in such connection they may be first exploited.

Some technicians see some possibilities, too, for distant manipulation on location of rubberized marionettes used in conjunction with the electrical so-called "mechanical man" lately invented by R. J. Wensley and described in the April edition of this journal.

Modern Method *of* Collecting *and* Milling Native Rubber

Buying Wet Rubber

Milling Native Rubber

Finishing and Drying

Finished Blanket Crepe

WITH factories situated practically in the midst of the Borneo jungles, only the most modern methods are used in the collecting and milling of native rubber as shown in the illustrations from Nomura & Co. of Singapore. Two of these factories are located in Barabai and Klua, towns remote from civilization and yet employing machinery of the latest design and the most up-to-date practices used in the busiest metropolis.

THE wet sheets are stored in pits at various strategic points in the jungle, convenient to the native gatherers, until such time as buyers may wish to view the product. The tanks have a capacity of 250 tons and the rubber may be stored indefinitely with no effect upon its quality.

MILLING, finishing, drying and packing are all carried on in a scientific manner in the factories of the Dutch Borneo Rubber Industry Co., Ltd., which is the rubber producing and manufacturing branch of the house of Nomura Gohmei Kaisha in Osaka, Japan.

AS may be observed from the illustrations, the grade produced in these factories, all situated in the Banjermassin Residency of Dutch Borneo, is flat bark crepe. The crepe is marketed in the United States under the name of Nomura flat bark crepe. This grade of rubber is used practically exclusively by the tire manufacturing companies in frictions. Nomura blanket crepe is produced in smaller quantities in the same factories.

EDITORIALS

Restriction and Pooling Rejected

APRIL, 1928, will be a memorable month in the world's rubber industry. Premier Baldwin first made the startling pronouncement that, as the result of investigation by the Civil Research Committee of his cabinet, the policy of regulating exports of crude rubber from British colonies would be wholly abandoned at the end of the present restriction year, October 31, 1928. It was intimated that the Restriction Act will by that time have quite served its purpose after six years' operation in relieving and upbuilding the depressed plantation industry, as well as in affording needed revenue for Far East dependencies. Hence the home government feels that it can safely allow planters to take care of themselves, giving ample time for conforming to changed conditions.

Scarcely three days later the American Congress rejected the Newton amendment to the Webb-Pomerene law authorizing joint export marketing to also countenance connective importation or pooling of purchases of rubber, sisal, potash, etc. The professed objection to the proposition was that conditions were not serious enough to warrant the enactment of any war-like "defense of the realm" law, which might also establish a mischievous precedent. Perhaps, as is alleged, farm bloc and party disaffection also contributed much toward the defeat of the measure to remove legal objections to the operations of the buying agency, which had neither sought to restrain trade nor put other buyers at a disadvantage. With restriction doomed, too, relief seemed less urgent.

An odd situation is presented in which the British Government refuses longer to back up its rubber sellers and the American declines to uphold its rubber buyers. Now the world is musing on the motives that impelled the British to forsake loyal colonials. Perhaps they finally realized the futility of maintaining a policy that was not only inherently unsound but was bound to invite powerful reprisals, as witness the activity of the rubber buying agency, the increasing production of reclaim and the launching of great American plantation projects. Perhaps it was the indifference to cooperation shown by the Dutch planting industry, which between 1922 and 1927 showed a 300 per cent increase in production, so that their output for the latter year was well beyond the British total. Or perhaps planters themselves were reluctant about carrying the burden of price maintenance against growing odds and the government saw neutrality as its only recourse.

However, the British government's decision to quit restriction, and to yield to the logic of events, may be hailed as a victory for justice, as it also exemplifies real statesmanship. Meanwhile the planting interests, with strengthened resources, will find compensation for their seeming setback in amalgamations or in measures for cheapening production. American rubber buyers, even though lacking government support, will at least have the advantage of purchasing in a more normal market, perhaps with less need of collective operations; and to insure an unfailing supply with freedom from extreme fluctuations in price or from possible embargoes they will encourage rubber growing in territory immune to foreign conflicts.

* * *

Prospects for Cheaper Tires

MANY retail buyers of rubber goods get an unfortunate impression from press reports of breaks in the market for crude rubber. They expect prices of manufactured articles to quickly reflect the reduced cost of crude material. They do not appear to realize how little there is in the present situation to justify lower prices for tires or other rubber products. The tire factories, for example, produced much and dealers bought heavily during the winter on the spring dating plan, and under an agreement protecting them against a price decline to May 15. Many manufacturers, have been committed for an average of ninety days on rubber around 40 cents a pound, hence about three months must elapse before they can take advantage of a lower price range on crude.

Moreover, with about $300,000,000 now tied up in finished goods, it would be irrational to expect manufacturers to follow the vagaries of the crude market or to voluntarily submit to big losses on products in addition to a huge involuntary write-down on their crude inventories. Buyers, too, fail to recall that tires were reduced about 20 per cent in price last year, so that they now cost less and last longer than ever before. Were low prices for rubber to rule for a considerable time, lower product prices would be warranted; but otherwise an early decline might be fraught with grave results to an industry just recovering from a very severe setback.

* * *

Insuring Best Grafting Yield

THAT by grafting well-selected buds on Hevea stocks the latex yield of the rubber trees may be largely increased is well known. One researcher, however, warns planters not to be too confident about the amplified yield being constant. As the scions are so often set on unselected stocks no uniform results can be assured. Grafting frequently produces "sports," growths deviating in character from both stocks and bud-parents, and yield variations will occur for which there is as yet no explanation. Hence, it is contended, if bud-grafting is to score its greatest success it may be found necessary to propagate stocks as is done in the scientific cultivation of apple, plum, and other fruit trees.

American Chemical Society

Rubber Division Meeting

THE Seventy-Fifth Meeting of the American Chemical Society was held April 16 to 20, 1928, at St. Louis, Mo. The sessions of the Rubber Division were held at the Coronado Hotel, the Division headquarters. A large and representative attendance of rubber chemists listened to the varied program of papers, abstracts of which are printed below. The new quarterly periodical issued under the auspices of the Rubber Division early in April was the topic of much favorable comment and interest among the members present. This innovation and the plan to carry out local group meetings which have been successfully inaugurated are evidences of the growing interest in rubber chemistry.

All the papers were of high order of merit. Special interest was elicited by a number of them, for example, the description by F. D. Abbott of a machine for compressing and flexing rubber, at the same time applying force in two directions at the rate of 800 impacts per minute.

The group of three papers on carbon black by Johnson, Beaver and Keller, and Plummer and Beaver resulted in a symposium on the variability of carbon black. The papers by J. R. Sheppard and by the same author with W. B. Wiegand, had for their object expression in numerical units of the state of cure at any point during a rising temperature cure.

The method of H. R. Thies for comparing the scorching qualities of accelerators involves heating rubber samples containing accelerator and zinc oxide for different lengths of time, treating them with a solvent, and determining the solubility by the turbidity of the solution.

The usual banquet of the Rubber Division took place at 6:00 p. m. in the Ball Room of the Coronado and was attended by a large gathering of rubber chemists and their guests. About 140 chemists were in attendance.

The division adopted resolutions thanking the Rubber Association of America and Harvey S. Firestone for financial aid contributed to the division's publication, and also to the work of the Physical Testing Committee. A vote of appreciation was also given to C. C. Davis for his work as editor of *Rubber Chemistry & Technology*.

-:- Abstracts of Papers -:-

Determination of Acidity of Raw Rubber by Water Extraction. A careful check of the results obtained for the water-soluble acids in a sample of rubber by direct water extraction was made. It was found that extraction of rubber with water near its boiling point gave an acid number which varied with the time of extraction. This is believed to be due to hydrolysis of esters as the same effect can be produced by boiling an acetone extract from the rubber. To avoid the difficulty, if determination of water-soluble acids is desired, acetone extraction followed by water extraction of this extract at the temperature of a water bath is recommended.—A. D. Cummings and H. E. Simmons, Municipal University of Akron, O.

Some Observations with Ultra-Accelerators. The preparation of several thiuram sulphides, including dimethyl-diethyl-thiuram-disulphide not previously recorded in the literature, is described. Evidence is brought forth to indicate that the inactivity of thiurams derived from primary amines is due to their rapid decomposition into hydrogen sulphide and a mustard oil. The lack of activity of a compound made from carbon oxysulphide and an amine is noted. The equivalence of cure obtained from tetramethyl thiuram disulphide alone and from the monosulphide plus sulphur is discussed. Curing experiments were made and data on tensile and aging of the accelerated stocks are given.—A. D. Cummings and H. E. Simmons, Municipal University of Akron, O.

The Accelerating Action of Some Aldehyde-Aniline and Aldehyde-O-Amino Thio Phenol Condensation Products. In the course of investigating the action of sulphur on aldehyde aniline condensation products in an attempt to trace the vulcanizing action of these substances, a number of compounds was prepared and their curing data compared with the original anil and also with 2-mercapto benzothiazole. These compounds were prepared on the supposition that the anils might undergo sulphurization to form thiazoles or similar bodies which might prove to be the true accelerators.—A. M. Clifford and C. E. Boord, Ohio State University.

The Dispersion of Pigments in Rubber. I. Microscopical Studies of Agglomeration and Flocculation. In addition to particle size and shape, the degree of dispersion of a pigment such as carbon black undoubtedly has an important bearing on its reinforcing power in a rubber compound. This paper gives some preliminary results that have been obtained in an investigation of the factors affecting the final dispersion of pigments in rubber compounds. Certain mixtures have been followed microscopically from the uncured state through various stages of vulcanization to the final cured product. In general, it has been shown that the dispersion of a pigment in the uncured compound is influenced by the presence of other ingredients and also that important changes take place during the vulcanization process.—Ernst A. Grenquist, Fisk Rubber Co.

An Accurate Method of Comparison of Scorching Qualities of Accelerators. A method of measuring scorching qualities of accelerators is given where the critical point or point of set up is determined by the non-solubility of the slightly vulcanized stock in gasoline. Various examples and comparisons are given. A system of index numbers is formulated for comparison of accelerators having definite values which readily shows the behavior of an accelerator at milling, and storing temperatures.—H. R. Thies, Miller Rubber Co.

The Evaluation of Variable Temperature Cures, with Special Reference to Rubber Footwear and Proofed Goods Schedules. The exact evaluation of vulcanizing schedules involving variable temperatures, such as characterize footwear and proofed goods vulcanization, has in general been neglected because of the laborious character of the calculations. In this paper relations between the several variables pertaining to a curing schedule are developed and the evaluation of any cure becomes a corollary. Several optional procedures for applying the method are discussed and graphs of the most important relations are given to render its practical use rapid and convenient. By way of illustration the method is applied to typical footwear and proofing schedules.—J. R. Sheppard and W. B. Wiegand, Eagle Pitcher Lead Co., and Binney & Smith Co.

An Experimental Determination of the Temperature Coefficient of Vulcanization with Litharge. A determination of the temperature coefficient of vulcanization on a typical litharge stock in press cures ranging from 242 degrees F. to 332 degrees F. yields 13 degrees F. as the temperature interval responsible for a doubling of the curing intensity. Breaking tensile, elongation, tensiles at several fixed elongations, tensile product, energy and combined sulphur when used separately as criteria yield coeffi-

cients ranging from 12.6 degrees F. to 13.7 degrees F., values which agree within the limits of experimental error with the average for all criteria of 13 degrees F. It follows that the character of the vulcanizate remains approximately the same as the temperature and time are jointly changed in such a way as to keep the total curing effect constant.—J. R. Sheppard, Eagle Pitcher Lead Co.

Abrasion Tests of Rubber Stocks Containing Various Types of Carbon Black. The abrasion loss of rubber stocks containing different types of carbon black was determined by means of the Williams abrasion apparatus. It was found that the abrasion loss per unit of work increased as the size of the abrasive increased up to a size of 0.45 mm. and then decreased quite rapidly. No adequate explanation for these results has been found. It was shown further that the ratio of the abrasion loss of unaged stocks containing various types of carbon black to these stocks after aging in the Geer oven was not constant since it was found that some types of carbon black increase the rate of deterioration of rubber much more than other types.—W. B. Plummer and D. J. Beaver, Combustion Utilities Corp.

The Effect of Various Types of Carbon Black on Certain Physical Properties of Rubber Compounds. The effect of various types of carbon black on the rate of cure, tensile properties, aging and abrasion loss of rubber was determined. It was found that the presence of different amounts of oxygen adsorbed on or combined with the black retards the rate of cure in direct proportion to the amount of oxygen present and decreases the maximum physical properties obtainable from a given stock. The aging data show that the higher the amount of oxygen on the black, the more rapid the deterioration of the rubber stock when aged at 70 degrees C. in air. Other physical properties such as oil adsorption, iodine adsorption, acetone extract or color value could not be correlated with the effect of these blacks on the curing characteristics of rubber compounds.—D. J. Beaver and T. P. Keller, Combustion Utilities Corp.

Carbon Black I. A Study of Its Volatile Constituents. As far as revealed by literature, carbon black has never been completely analyzed chemically. In Bulletin 192, Bureau of Mines, a number of samples of carbon black are analyzed, but the findings are limited because only an ultimate organic combustion is used which does not of course reveal the real nature of the volatile constituents of the blacks. The bulletin does report an examination of the volatile constituents driven off up to 445 degrees C., but since gases come off in considerable quantity up to 955 degrees C., it is necessary to explore this region to determine analytically the volatile constituents of carbon black. This paper will contain: rates of evolution at various temperatures, rates of evolution at various absolute pressures including extremely low pressures, complete analyses of a number of carbon blacks, including volatile constituents, an examination of the influence of the quantity and nature of the volatile constituents on the behavior of carbon black when mixed and vulcanized with rubber.—C. R. Johnson, Godfrey L. Cabot, Inc.

The Effect of Repeated Reclaiming of Rubber. The question "Can rubber be repeatedly reclaimed without seriously affecting the quality of the reclaim?" is often asked. To throw some light on this point, a sample of whole tire reclaim was cured, then regenerated in a laboratory devulcanizer and the cycle repeated three times. While repeated reclaiming had no effect on the tensile of the resulting reclaim, the modulus increased and elongation decreased with each successive cycle. The chloroform extract and plasticity decreased with an accompanying increase in combined sulphur. The successive reclaims, incorporated in a low quality tread compound, imparted progressively decreasing elongation and tensile, with increasing modulus. Contrary to expectation, there was no increasing deterioration of aging properties, as far as could be judged by artificial aging.—George W. Miller, Akron Rubber Reclaiming Co.

A Machine for Testing Rubber Products Used to Absorb Vibration. A machine for studying the effect of flexing rubber under compression is described. The operation of this machine in the testing of shock insulators, motor supports, and other rubber stocks that absorb vibration, or undergo flexure under compression, is given in detail. Ordinary tests such as tensile and elongation are insufficient in evaluating such products. Furthermore, the more recent static compression-set test is not satisfactory. Results of tests on various stocks as given with this device check with dynamometer and service tests. Under the conditions of test adopted the permanent-set is shown to approach a maximum in three or four hours. The temperature of the test piece rapidly reaches a maximum value. Data and curves are presented for comparison of set under flexure with tests under tension and with static compression.—Franz D. Abbott, Firestone Tire & Rubber Co.

Softeners and Anti-Softeners. In the manufacture of rubber goods various materials are incorporated with the rubber in order to produce a mixture which will process more easily. Such materials are usually referred to as fluxes or softeners. A simple method of determining the relative effects of such materials is described. This consists in mixing the material in rubber under standardized conditions and determining the plasticity of the product by the Williams method. Some materials show stiffening instead of softening action and both types are shown in the results reported in this paper. Benzidine and *p*-amido phenol are examples of materials which stiffen rubber.—Erle C. Zimmerman and Leslie V. Cooper.

TIME RECORDING DATER

The Resilio air cushion time stamp is made with a stationary time dial and outside indicator, this construction bringing the hour of 12 o'clock always at the top of the stamp and over the other matter. The other figures of the time dial are in their proper positions, making reading as easy and as certain as the consulting of a clock or watch.

The Resilio is made with an all-rubber handle, making for comfort, quietness and easy printing. The handle is full length, giving an agreeable action and adding greatly to the wearing qualities of the stamp.

The top index plate is plain and the setting correspondingly easy and certain. Any desired wording can be had inside the time dial. The date, which appears centrally located, may be had arranged in one straight line or in tier form.

Resilio Stamp

The mechanical details of the stamp have been carefully worked out and the manufacturer believes it to be the best stamp of its kind on the market, containing many new, individual and valuable selling features.—The R. H. Smith Mfg. Co., Springfield, Mass.

Germany Prohibits Use of Solid Tires

Tests have been made regarding the wear of solid rubber tires on road surfaces, and these tests have apparently proved that solid tires are particularly destructive. Accordingly, German governmental ruling is expected to prohibit their importation or use on new vehicles after April 1, 1928. It will be possible to continue to employ such tires on vehicles, which have previously been in use, up to July 1, 1929, and in the case of trailers up until January 1, 1930. In most cases the solid tires must be replaced by pneumatic casings. An exception is made in the case of 2-axled trucks of over 3-ton weight. Such trucks may carry additional solid rubber tires of high elasticity alongside of their pneumatics. Another exception is tractors or other slow speed vehicles used for agricultural or similar purposes.

What the Rubber Chemists Are Doing

Latex Contaminated with Copper Compounds as a Source of Fire

J. G. Fol and W. De Visser[1]

A TEXTILE factory in Holland made double texture cotton fabric by applying a layer of latex to one of the fabrics and passing both fabrics through a calender after which they were dried and pressed together. From the calender the double texture was rolled up immediately without previous cooling and the big rolls were stored. Shortly after storage a smell of burning was noticed in the store room and on closer inspection it appeared to emanate from the rolls. On opening these rolls it was found that the color of the fabric had turned from white to light brown. The cloth had lost its suppleness and could be readily torn. In the interior of the roll the cloth was scorched and even locally charred. One got the impression that the rubber in the cloth was severely oxidized, that is to say, resinified. The problem to be solved was what caused this strong oxidation which eventually led to spontaneous combustion.

According to information received from the mill the latex was placed in a brass tank and it also came into touch with a brass roller. From further information it became evident that the ammonia, which is added to the latex as a preservative, dissolved copper out of the parts of the machine mentioned. In this way the cloth was covered with a layer of rubber in which copper compounds were evenly distributed. As copper and copper compounds have an extraordinarily accelerating effect on the oxidation of rubber and oxidize the latter in a very short time even at ordinary temperature, it was clear that the oxidation mentioned above was caused by the contamination of the latex with copper compounds.

On investigating the samples supplied by the factory, it was found that the original cloth did not contain any copper. However, the ash of the fabrics treated with latex showed a very distinct copper reaction, which explains the oxidation of the rubber. That this oxidation under certain conditions can proceed so quickly and with so great a development of heat, that spontaneous combustion occurs was not known to us and therefore it seemed desirable to prove the tendency for spontaneous combustion of latex treated fabrics in the presence of copper. For this purpose an apparatus was used designed by Mackay[2] to test the tendency for spontaneous combustion of oil-proofed cloth. This apparatus proved to be very useful for the purpose.

The apparatus is shown in Figure 1. In a water bath A, an air bath B is suspended. The pipes C and D permit circulation of air. The material F to be tested is placed in a gauze cylinder E around a thermometer. When the water in A is boiling, the temperature in B is about 92 degrees C. If the material under test has a tendency for spontaneous combustion, the thermometer rises considerably above 92 degrees C. If this tendency is absent the thermometer keeps indicating the temperature of the air bath.

From the cotton supplied by the manufacturer three samples were prepared: (1) cloth impregnated with pure ammoniated latex; (2) cloth impregnated with a copper oxide-ammonia solution; (3) cloth impregnated with latex containing copper oxide-ammonia prepared by suspending a copper spiral in the latex for 24 hours. This latex contained 290 mg. copper per liter, an amount sufficient to produce a blue color of the latex. The amount of copper in the latex treated fabric was approximately 40 mg. per square meter. The cloth was wrapped tightly around the thermometer, the roll having the diameter of 3.5 to 4.0 cm.

The dotted line in Figure 2 represents the temperature, 92 degrees C, of the air bath. From the curves I and II it appears that cotton cloth impregnated with pure ammoniated latex or with a solution of copper oxide-ammonia takes the temperature of the air bath, and therefore does show the slightest tendency for spontaneous combustion or even a rise in temperature caused by oxidation.

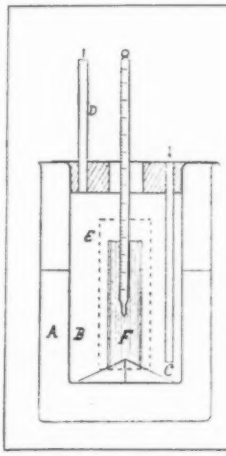


Fig. 1. Mackay's Apparatus

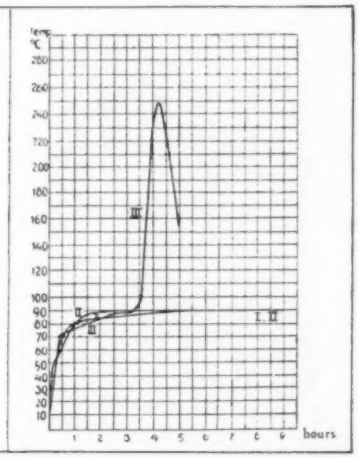


Fig. 2. Change of Temperature of Various Samples When Heating at 90° C.

After about eight hours' heating the samples did not show any alteration. On the other hand the temperature in the fabric treated with latex containing copper rose very quickly after the temperature of the air bath had been reached. In about 45 minutes the thermometer indicated 249 degrees C. Apparently the rubber was then completely oxidized, as the temperature came down quickly. When opening the roll the fabric around the mercury reservoir of the thermometer appeared to be scorched. About 2 cm. above the reservoir probably a still higher temperature had been attained, as on that place the cloth was partly charred and even locally burned to a white ash. On the inside of the air bath and of the outlet there was a deposit of tarry distillation products of the rubber.

These results not only confirm the fact, well known to every rubber chemist, that copper compounds oxidize and resinify rubber very quickly, but also that under certain circumstances this oxidation proceeds so rapidly, and therefore with so great a development of heat that spontaneous combustion and serious danger of fire results.

In the case in question the spontaneous combustion had been accelerated by tightly wrapping the cloth when still warm, which caused the oxidation to start at once with a notable velocity, and also by the rather large diameter of roll which conducted the heat badly so that the heat developed in the interior could only escape very slowly. This resulted in a rise in temperature which greatly accelerates oxidation and the initial temperature necessary for spontaneous combustion is soon attained.

The oxidation of latex-treated cloth and the danger of spontaneous combustion can be prevented by taking care that the ammoniated latex does not come into touch with copper or brass alloys. All parts of machinery and utensils made from metals

[1] Propaganda Department of the International Assoc. for Rubber & Other Cultivations in the Netherlands Indies.
[2] "Chemical Technology and Analysis of Oils, Fats and Waxes," J. Lewkowitsch, 1915, Vol. III, p. 99.

should be replaced by parts made from other materials which are not affected by ammonia or have not an oxidizing influence on rubber, for instance, aluminum, wood, rubber, etc. If this precaution is carefully observed latex can be of excellent service for the purpose described and no danger of fire is to be feared.

Chemical Unsaturation of Rubbers Vulcanized with Polynitro Compounds and Benzoyl Peroxide[1]

HARRY L. FISHER[2] AND A. E. GRAY[3]
The B. F. Goodrich Co., Akron, O.

STUDIES on the chemical unsaturation of ordinary vulcanized rubber show that vulcanization has caused no change in the unsaturation of the rubber hydrocarbon beyond that which can satisfactorily be accounted for by the chemical combination of sulphur on the basis of one atomic equivalent of sulphur to a C_5H_8 group.[4] If such is the case with sulphur vulcanization, it becomes very desirable to know whether there is any change in the unsaturation when rubber is vulcanized with substances other than sulphur—namely, polynitro compounds and benzoyl peroxide. Do these substances or their decomposition products also add to the olefin bonds and thus similarly reduce the unsaturation of the rubber hydrocarbon, or do they simply act in a catalytic fashion and change the rubber hydrocarbon without changing its unsaturation? In an effort to throw some light on this interesting and intricate problem, samples of rubber were vulcanized with dinitrobenzene, trinitrotoluene, and benzoyl peroxide, and the unsaturation was determined by the Kemp-Wijs method with iodine chloride.[4]

Ostromislenski, who discovered these methods of vulcanization without sulphur, believed that the reaction was due to oxidation. Molecular oxygen, so far as is known, does not vulcanize rubber as sulphur does. The products formed when rubber is treated with oxygen or allowed to stand in air are very different physically, and probably chemically. Of course, sulphur does not vulcanize rubber at room temperatures except in the presence of a catalyst. Then, as for example, with an ultra-accelerator, the air cured, vulcanized rubber may contain as little as 0.5 per cent of combined sulphur.[5] With a catalyst such as platinum black, oxygen is absorbed by the purified rubber hydrocarbon in solution until finally an amount is absorbed equivalent to the formation of a completely saturated compound $(C_5H_8O)_x$, and if perbenzoic acid is used, the same or similar compound—it has the same empirical formula—is obtained. These reactions correspond in a general way to those with sulphur.

Now oxygen is very closely related to sulphur chemically, and by analogy it ought to vulcanize rubber if the proper conditions could be found. If it does and the amounts correspond to those with sulphur, then using the 0.5 per cent of combined sulphur mentioned above, as a possible minimum, the equivalent of oxygen would be just one-half (16/32) and the per cent of oxygen would be 0.25. Perhaps the polynitro compounds and the benzoyl peroxide do oxidize the rubber hydrocarbon and thus cause vulcanization. If they do, and oxygen thus adds chemically as the sulphur does, the amount added must be very low—less than 0.14 per cent, since this would be the amount equivalent to the greatest deviation, 0.57, which is approximately the same as the recognized error with the Kemp-Wijs method, 0.5 per cent of C_5H_8. The ratio of oxygen to C_5H_8 is 16:68 or 0.24. No method for determining such a small amount of oxygen is known.

The writers believe that their results help to support the theory that ordinary vulcanization is an unknown or undetermined type of change in the hydrocarbon involving no chage in the unsaturation, and that the chemical union of sulphur is a secondary reaction producing a further change which no doubt gives properties that are very important in the manufacture of rubber goods. But this change, however, is one of degree only and not one of kind.

[1] Presented before the Rubber Division at the 73rd Meeting of the Am. Chem. Soc., Richmond, Va., April 11 to 16, 1927. Received October 25, 1927. Abridged from *Indus. & Eng. Chem.*, March, 1928. See also *Rubber Chem. & Tech.*, April, 1928, pp. 101-105.
[2] Present address, U. S. Rubber Co., 561 W. 58th St., New York, N. Y.
[3] Present address, Lehigh University, Bethlehem, Pa.
[4] Spence and Scott, *Kolloid-Z.*, 8, 308 (1911); also private communication from Kemp, author of the Kemp-Wijs method for the determination of the rubber hydrocarbon, *Ind. Eng. Chem.*, 19, 531 (1927); and unpublished work of the writers.
[5] D. F. Cranor, IND. RUB. WORLD, December, 1919, pp. 137-8.

Hauser Colloidal Chemistry Course

Dr. Ernst A. Hauser

During the coming summer the Massachusetts Institute of Technology will offer a special ten weeks' course in colloid chemisty, given by Dr. Ernst A. Hauser of Frankford, Germany. Following an introductory review of the underlying principles, the course will take up the more important applications of colloid chemistry to industrial processes and problems. Opportunity will be afforded for intensive laboratory work and, as soon as he has mastered general technique, the individual student will be allowed to focus on important problems of special interest to him.

In view of the ability of Dr. Hauser and his outstanding achievements in applying colloid methods in rubber and other industrial work, it is felt that the opportunity here offered is unique.

The importance of colloid chemistry in the rubber industry is such that every rubber chemist who can arrange to attend one or more of the divisions of this course should not fail to plan for it. A bulletin descriptive of subjects and their method of treatment can be procured by addressing Prof. W. K. Lewis, M. I. T. Dept. of Chemical Engineering, Cambridge, Mass.

Resistox

Resistox is the trade name of an age-resister for use in rubber. The material itself is a fluffy, pinkish yellow powder that disperses readily on the mill and so can be very easily incorporated in all kinds of rubber stocks. It is practically inert during the cure and likewise the cured stock shows this inertness by no great change in physical properties. Due to its color Resistox can be used in light or colored stocks. When such stocks are exposed to sunlight, if they contain a goodly amount of Resistox they show a yellow discoloration which in normal usages is not apparent.

Research in the Rubber Industry

Dr. Harlan L. Trumbull of the Research Department of The B. F. Goodrich Co., Akron, O., addressed groups of chemists both at Madison and Ames, Wis., on research in the rubber industry. This was not a prepared paper but an informal talk which briefly covered the early uses of latex in America, vulcanization as discovered by Goodyear, and the isomerization of rubber.

A. S. M. E. Meeting

The American Society of Mechanical Engineers will hold its spring meeting May 14 to 17, 1928, at Pittsburgh, Pa. The headquarters will be the William Penn Hotel and efforts have been made to make each session interesting and entertaining to the members attending. Many excellent papers will be read during the convention.

American Rubber Technologists

FREDERICK J. MAYWALD, chem. *b.* June 25, 1870, New York, N. Y.; Cooper Union, 1888; post grad., 1890; special student Brooklyn Polytechnic Institute, 1895-6; consult chem. since 1888; chairman Municipal Explosives Committee, 1910; first secretary, Rubber Section; Amer. Chem. Soc.; past pres., Cooper Union Chem. Soc. *Author:* Over twenty patents. *Member:* Mason, Shriner, Amer. Electro. Chem. Soc., Amer. Chem. Soc., A. S. T. M., Br. Soc. of Chem. Indus. *Address:* William St., Belleville, N. J.

Walter J. Geldard, chem. *b.* May 28, 1895, A. B. Clark U., 1915, M. Sc. McGill U., 1917; Lieut. C. W. S., U. S. Army, Nov., 1917-May, 1919; chf. Analytic Division, Fixed Nitrogen Research Lab., May, 1919-Sept., 1920; chf. plant chem. International Coal Products Corp., Sept., 1920-Mar., 1922; research asso. Bureau of Standards, Mar., 1922-Jan., 1925; chem. in charge of Routine Lab., Fisk Rubber Co., Jan., 1925-Dec., 1925; development compounding, Dec., 1925-Apr., 1927; mgr. lab. eastern div., Fisk Rubber Co., since Apr., 1927. *Research:* Development of Methods of Nitrogen Determination; Low Temperature Carbonization of Coal-Charcoal Process; Utilization of Beet Sugar Waste; Published seven papers. *Member:* Am. Chem. Soc., Mason. *Address;* 120 East Alvord St., Springfield, Mass.

Earle L. Reed, chem. *b.* 1893, Rogers, O.; B. S., Allegheny Coll.; research chem. Firestone T. & R. Co., Akron, O., 1916-1920; chf. chem. Hodgman R. Co., Tuckahoe, N. Y., 1920-1924; research and tire compounder, Hood R. Co., Watertown, Mass., since 1927. *Member:* Phi Delta Theta, Alpha Chi Sigma. *Address:* 223 Common St., Watertown, Mass.

James J. Morrison, elec. engr. *b.* Nov. 1, 1884, Pembroke, Me.; B. S., U. of Maine, 1908; N. E. Tel. and Tel. Co., 1908; D. C. & W. B. Jackson, Boston, Mass., 1909; Genl. Elec. Co., Schenectady, N. Y., 1910; U. S. Navy Dept., Bureau of Steam Engr., 1911; Supt. Elec. Cable Works, Am. Steel & Wire Co., Worcester, Mass., since 1919. *Member:* Am. Inst. Elec. Engrs. *Address:* 767 Mullbury St., Worcester, Mass.

Edward Littlejohn, chem. engr., *b.* May 17, 1899, Toronto, Can.; Royal Military Coll., B. A. Sc., U. of Toronto, 1924; flying officer, Royal Air Force, 1918-1919; lab. asst. golf ball dept., Dunlop Tire & Rubber Goods Co., Toronto since 1926. *Member:* Can. Inst. of Chem., Am. Chem. Soc., Theta Delta Club, Mason. *Address:* 59 Moore Ave., Moore Park, Toronto, Can.

William F. Zimmerli, chem. *b.* Jan. 2, 1888, New York, N. Y.; B. S. Brooklyn Polytechnic Inst., 1909; Ph.D., Heidelberg, Germany, 1912; research chem., B. F. Goodrich Co., Akron, O., 1912-1914; asst. prof. chem., Akron, U., 1914-1916; chf. chem., Pflauder & Co., Rochester, N. Y., 1916-1919; chf. chem., Howe Rubber Corp., New Brunswick, N. J., 1919-1924; tire div., 1924-1927; research div., since 1927, B. F. Goodrich Co., Akron, O. *Author:* "Development of the Present Auto Tire" and a patent on rubber adhesive. *Member:* Am. Chem. Soc., and chairman of Rochester Section in 1919, and Amer. Inst. of Chem. Engrs. *Address:* 117 Braewick Drive, Fairlawn, O.

Joseph A. Lange, engr. *b.* April 7, 1894, Passaic, N. J.; M. E. Stevens Inst. Tech., Hoboken, N. J., 1916; Manhattan Rubber Mfg. Co., Paterson, N. J., since 1916; research and development, manager abrasive wheel dept. *Address:* 129 Amsterdam Ave., Passaic, N. J.

THE INDIA RUBBER WORLD'S brief biographies of American rubber technologists are approved by leaders of the rubber industry because the ambition, imagination and practical accomplishments of these men are largely responsible for America's leadership in the world's rubber manufacturing industry. Technical superintendents, chemists, process and development engineers in rubber manufacturing and reclaiming plants, research, testing, and service laboratories are invited to send their biographical data to us for publication.

Justus William Matthaei, *b.* Dec. 25, 1875, Marburg, Germany; High School of Marburg U., 1903; Siemens & Halske or Gen'l Elec. Co. of Berlin, Germany; with U. S. Rubber Co., 1907-1910; supt. rubber dept., Armstrong Cork Co., Pittsburgh, Pa., 1910-1922; supt. rubber dept., Endicott Johnson Corp., Johnson City, N. Y., 1922-1927; genl. supt. Panther Rubber Co., Stoughton, Mass., since 1927. *Member:* B. P. O. E. *Address:* 138 Newbury St. Brockton, Mass.

J. C. Dunn, chem. *b.* Feb. 20, 1893, Troy, N. Y.; Rensselaer Polytechnic Inst., Troy, N. Y., 1915; chem. and prod. supt. du Pont, 1915-1920; prod. supt. I. B. Kleinert Rubber Co., New York, N. Y. 1920-1924; sales dept., 1924-1927 and sales mgr., since 1927, Vulcan Proofing Co., Brooklyn, N. Y., 1924. *Member:* Mason, Shriner. *Address:* 31 Jamaica Ave., Flushing, N. Y.

Leon Field, engr. *b.* 1891, Dover, N. H.; M. E., U. of Maine, 1914; draftsman U. S. Rubber Co., plant engr. and genl. supt., Tyer Rubber Co., Andover, Mass. *Address:* Andover, Mass.

John Everett Robinson, chem. engr. *b.* Mar. 29, 1891; Pembroke Academy, B. S., U. of N. H., 1912; asst. chem. India Rubber Co., New Brunswick, N. J., 1912-1913; asst. chem. 1913-1916; chf. chem. 1920-1923, tech. supt. Keds Div., since 1923, National India Rubber Co., Bristol, R. I. *Member:* Amer. Chem. Soc., A. S. T. M., Odd Fellow. *Address:* National India Rubber Co., Bristol, R. I.

Robert Chandler Kelley, *b.* Jan. 2, 1895, Dorchester, Mass.; A. B. Harvard Coll., 1917; waste control, Converse Rubber Shoe Co., Malden, Mass. 1918-1925; planning heel and sole division, Hood Rubber Co., 1925-1926; pur. agt. and head of plant maintenance, Converse Rubber Shoe Co., since 1926. *Author:* Contributions to trade journals; Boston Cham. of Commerce treatise on material control, 1924; Instructor, Northeastern School of Commerce and Finance, 1927; Purchasing and Commodity Analysis; chairman Regional Committee on Textiles (New England), National Pur. Agts. Asso., 1927. *Member:* Mason, Malden Chamber of Commerce, N. E. Purchasing Agts. Asso., Am. Legion. *Address:* 503 Walnut St., Newtonville, Mass.

John Crawford Smith, mech. engr., *b* 1879 Perth, Scotland; M. E., Perth Academy and Heriot-Watt College, Edinburgh, Scotland; marine engineer, City Line Glasgow, Scotland, 1901-1904; head draftsman, Brown Bros., Edinburgh, Scotland, 1904-1908; chf. eng., Inland Navigation Co., Hamilton, Ontario, 1909-1910; mech. supt., Canadian Blower & Forge Co., Kitchener, Ont., 1915-1919; mech. supt., Maritime Corp., St. John, N. B., 1919; indus. engr., Dunlop Tire & Rubber Goods Co., Toronto, Ont., 1919-1920; prod. supt., since 1920. *Member:* Asso. of Professional Engrs. of Canada, Ontario; Masons. *Address:* 233 Dunn Ave., Toronto, Ont., Can.

John Harvey Westren, chem. engr., *b.* June 8, 1900, Toronto, Ont., Can.; B. A. Sc., U. of Toronto, 1922; asst. to inspector, tire dept., Dunlop Tire & Rubber Co., Buffalo, N. Y., 1923-1924; asst. to exper. engr., Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., 1924-1925; tech. asst. to supt., since 1926. *Member:* Engineering Inst. of Canada, Asso. of Professional Engrs. of Canada. *Address:* 12 Lynwood Ave., Toronto, Ont., Can.

John H. H. McNamee, *b.* Nov. 10, 1853, Randolph, Mass.; Boston Coll., 1871; pres. and mgr., Bay State Insulated Wire & Cable Co., Boston, Mass.

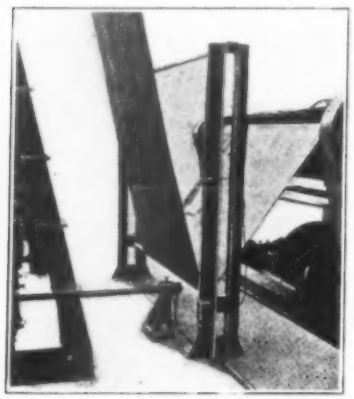
William H. Steinberg, chem. engr. *b.* Mason City, Ia., B. S., U. of Wis., 1913; Cutler-Hammer Co., Milwaukee, Wis., 1913-1916; Garfield Mfg. Co., Garfield, N. J., 1916-1917; sales mgr. Abrasive Wheel Dept, Manhattan Rubber Mfg. Co., Passaic, N. J., since 1917. *Address:* 129 Lafayette Ave., Passaic, N. J.

Joseph Franklin Padula, chem. *b.* 1900, New York, N. Y.; graduate of St. Anthony's Acad., Catskill, N. Y.; Coll. City of N. Y., 1917-1920; ph. chem., Temple U., Phila., Pa., 1923; B. S., 1924 and M. S., Manhattan Coll., New York, 1926; asst. chem., De La Vergne Mach. Co., New York, N. Y., 1921-1922; fellow in chem. and biol., Manhattan Coll., 1923-1924; rubber chem., U. S. Navy Yard, Brooklyn, N. Y., 1924-1925; research org. chem., Celluloid Co., Newark, N. J., 1926; rubber chem., U. S. Navy Yard, Brooklyn, N. Y., since June, 1926. *Author:* Thesis "Comparison of Various Crude Rubbers." *Member:* Am. Inst of Chemists, Am. Pharm. Asso., Lieut. Chem. Warfare Reserves Alpha Phi Delta. *Address:* 1801 Sixty-Ninth St., Brooklyn, N. Y.

New Machines and Appliances

Fabric Regulator

The feed of fabric from the lining stripper to the Bolton bias cutter is regulated by the device here pictured, which consists of a floating roller arranged between two uprights and fastened to the floor. The fabric passes under this roller which is raised or lowered to a maximum or minimum position by the feed of the fabric. Limit switches fastened to the uprights are tripped by the roller and control the starting and stopping of the lining stripper as the feed may demand. In case the limit switch should fail a device operated by the floating roller stops the bias cutter.



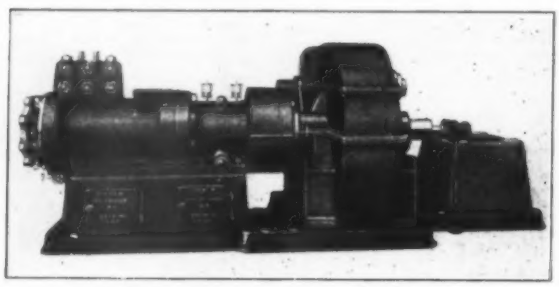
Spadone Fabric Regulator

The chief advantages of the fabric regulator are, that as the fabric is always under tension it considerably reduces its shrinkage between the lining stripper and bias cutter and as the tendency is to feed in a straight line it thereby causes greater accuracy of cut. It further prevents the possibility of damage to the bias cutter because of lack of sufficient feed of fabric and eliminates necessity of constant watch of the lining stripper.

The results of this equipment have been proved by long and thorough trial under actual operating conditions and it will more than pay for itself within a short period of time because of the savings it effects in material and labor.—Spadone Machine Co., Inc., 15 Park Row, New York, N. Y.

Giant Rubber Strainer

In the processing of reclaimed rubber the complete removal of the stray particles of metal, whether magnetic or non-magnetic, is accomplished by straining the material through a wire mesh screen protected against breakage. This protection is secured by supporting the wire screen in a perforated holder or head that admits passage of the screened or strained reclaim. Straining reclaim demands the expenditure of much power and necessitates a particularly rugged tuber or extruding machine.



Heavy Duty Strainer and Tuber

The illustration represents a 10-inch heavy duty machine designed to accomplish this and other heavy duty extrusion work on compounded rubber and reclaims. In the case of the machine illustrated the power is transmitted to the forcing screw through a double reduction herringbone gear unit.—Nagle Machine Co., Erie, Pa.

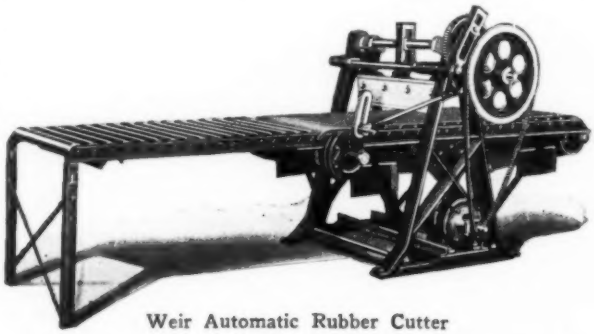
Cutter for Tubing Machine Feed

A machine for automatically cutting rubber in strips of various widths convenient for feeding to a tubing machine is here pictured.

One of these machines will take care of the production of three or four mills, and eliminate all labor between mills and tubing machines. The use of one of these machines in a plant employing but one mill shows a very substantial saving.

The cutting knife is 28 inches long and cuts crosswise of the batch of rubber as it is fed through the machine. The length of feed is determined by the width of the strip required and can be instantly and conveniently varied throughout its range, from one to four inches.

At the front of the machine is a gravity belt conveyer carried on ball bearing steel rollers. This forms a bench or table upon which the mill operator deposits his batch of rubber, after which his attention can be returned to his mill. A similarly mounted belt takes the batch from the conveyer and feeds it under the cutter, delivering the strips ready for the tubers. This delivery



Weir Automatic Rubber Cutter

lends itself to a very simple conveyer adaptation for serving a row or battery of tubing or insulating machines.

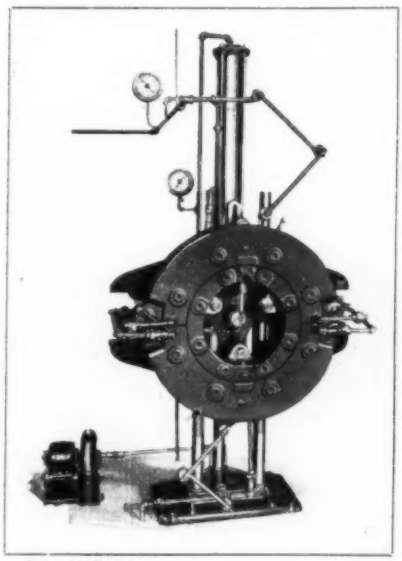
The simplicity and ruggedness of the frame structure together with the accessibility for lubrication of its few moving parts, insure extremely long life. A unique feature of construction is the knife carriage which employs a straight line link motion, rather than the ordinary, "slide and way" with its usual lubrication and dirt collecting evils.—The Hoosatonic Machine & Tool Co., Bridgeport, Conn.

Knitting Arts Exhibition

The Knitting Arts Exhibition was held the week of April 16 at the Commercial Museum, Philadelphia, Pa. Interesting and varied programs were offered and all the available space was contracted for. Among the exhibitors were the H. W. Butterworth & Sons Co., Klauder Weldon Division, Philadelphia; Cannon Mills, Inc., Philadelphia; Carrier Eng. Corp., Newark, N. J.; E. I. duPont de Nemours & Co., Wilmington, Del.; General Electric Co., Schenectady, N. Y.; A. Klipstein & Co., New York; and New England Butt Co., Providence, R. I.

Automatic Inner Tube Mold

A big step in speeding up production of molded tubes is claimed for the new automatic tube molding machine here pictured. So many of the operations are automatic from the pressing of a button to the removal of the cured tube, that one man can operate a much greater number of molds. The machine has an attachment for charging the length of cure and takes molds of different sizes, requiring comparatively little floor space and insures even cure of tubes by synchronizing the contact between mold and tube with the application of the desired pressure.



Pat. Applied for

Williams Tube Mold

A time study made on a battery of sixteen of these machines being operated in a tube plant, showed production per man per hour more than doubled.—Williams Foundry & Machine Co., Akron, O.

Automatic Gas Fired Boiler

A compact and practical gas fired steam generating unit suitable for furnishing steam for the vulcanizations incidental to the operations of rubber works laboratories is here shown. A portable boiler of this sort is particularly applicable in laboratories located in administration buildings or other points remote from the high steam pressures obtaining in the works.

McKee Automatic Boiler—Type C

The boiler pictured conforms to the code requirements of the American Society of Mechanical Engineers and is especially adapted for direct return work. The shell is seamless pressed steel with lower head riveted in. The special burner equipment is highly efficient and gas consumption is kept at a minimum by means of the sensitive controller which automatically maintains the desired pressure. The thermal efficiency of this type at full load is 75 per cent. Its hydrostatic test is 150 pounds.—Eclipse Fuel Eng. Co., Rockford, Ill.

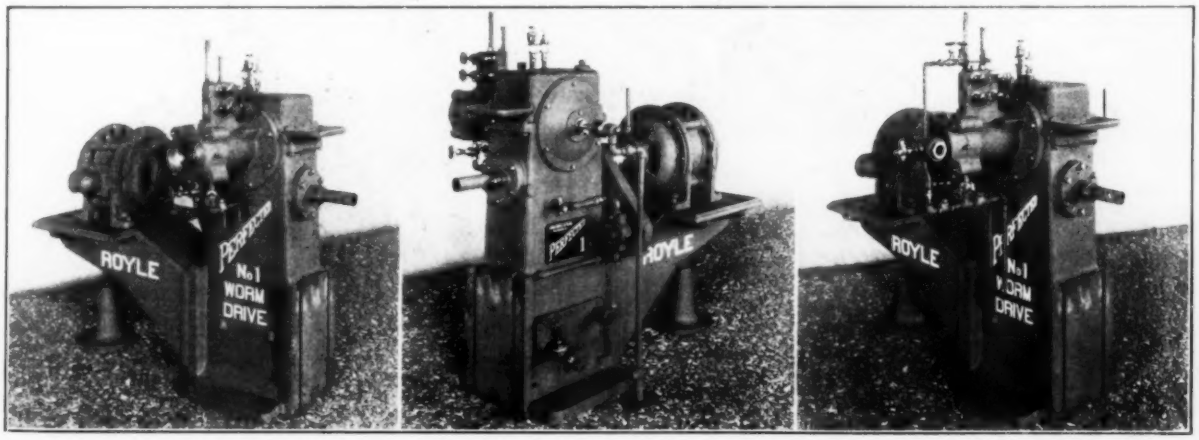
A Modern General Utility Tuber

Designed to Meet Keen Competition in Rubber Goods Manufacture

The perfected tubing machine No. 1, familiar to generations of rubber men, has been operated hitherto by a gear drive. It has recently been redesigned in order to meet the prevailing competitive conditions in current rubber practice, as for example, in the high speed production of insulated wire.

The leading features of the new design are shown in the group pictures, *A* represents the interchangeable motor bracket attachment, *B* the chain drive oil circulating pump, and *C* the machine equipped for wire insulation. The worm shaft is double ended for motor attachment at either side of the machine. Constant lubrication of the worm drive is maintained by a chain driven pump circulating water-cooled oil contained in a 14 gallon supply tank located in the base of the machine pedestal. The well known standard head, cylinder and two inch stock screw are chambered for water coaling.

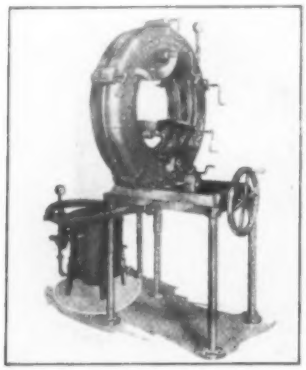
Picture *C* represents the machine with Crescent insulating head as used for insulating electric wire, tire bead wire, ect. The machine as redesigned is unsurpassed for all forms of rubber extrusion within the range of die sizes that the head will accommodate. It is manufactured by John Royle & Sons, Paterson, N. J.



A—Interchangeable Motor Drive *B*—Chain Drive Oil Circulating Pump *C*—Equipped for Wire Insulation

Full Circle Tire Retreader

The illustration represents a circle tire retreader consisting of two full circle molds, full circle aluminum alloy matrices, and full circle one-piece pressure plates. This assembly is mounted upon ways for opening and closing, the whole being installed upon heavy iron pipe standards of convenient height. Three sets of matrices and four spacer rings and pressure plates are provided to accommodate every size of tire. In operation, the sidewalls of the tire are not exposed to heat as the matrix covers the upper or retreading portion of the tire only and the cold plates press against the tire walls.

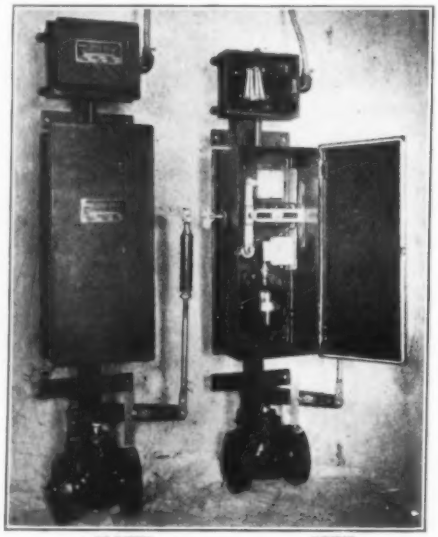


Super Mold Retreader

When the mold is opened for removing the tire the hot matrices are not touched or removed from the mold. Thus this operation is fast and convenient in addition to keeping each matrix at curing temperature, thereby assuring uniform cures. A single horsepower steam boiler is supplied with the vulcanizer.—The Super Mould Co., 420 North Sacramento St., Lodi, Calif.

Press Time Cycle Control

Molding and curing rubber heels in great volume is conducted in press rooms containing many hydraulic presses of identical pattern. The steam pressure for curing is of course under automatic control but not always the time cycle of opening and closing. Thus the less active pressmen fall behind their scheduled output and the day's production becomes variable in amount.



CLOSED OPEN

Hydraulic Press Controller

This condition can be corrected by applying to the battery of hydraulic presses the controlling device here pictured. It operates presses of the single or two-pressure type on the basis of a predetermined cycle, opening and closing all presses at the same time thus insuring a definite number of cures per hour. The controller operates as follows:

A single phase A. C. synchronous motor gives accurate timing and operates the contact carrying drum shaft through reduction gears. An index and cycle recorder, supplied with the larger units, shows how the cycle is progressing, and the recorder shows the total number of cycles performed.

The motor is started by a spring return push button, runs its cycle and is stopped automatically when the drum has made one complete revolution. By means of a cycle repeater the motor operates the drum continuously as long as the switch is closed. —Automatic Temperature Control Co., Inc., 425 Cumberland St., Philadelphia, Pa.

Full Molded Inner Tube Vulcanizer

The units forming the double row of inner tube vulcanizers here pictured are simple, practical and automatic in action. They consist of an inner and outer steam jacket shell. The central portion of the device moves out at the front to receive the tube to be cured. This movement is actuated by a small pressure cylinder mounted on the rear of the vulcanizer, handled by a duplex valve attachment.

In operation a spliced tube with valve attached is fitted over the extended lower half of the tube mold which is drawn back to place. Inflation and curing take place automatically. When

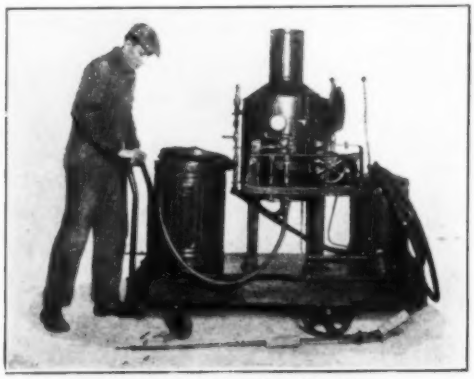
Utility Full Molded Tube Vulcanizer

mounted in rows as pictured, this vulcanizer forms a very compact curing equipment of any desired capacity. Thus mounted these vulcanizers permit of group control for time and temperature.—Utility Mfg. Co., Cudahy, Wis.

Portable Cleaning Device

The apparatus here pictured consists chiefly of a pressure boiler and two pumps, one for the gasoline, gas or acetylene fuel which is used to heat the water or cleaning fluid and the other for delivering the fluid at high pressure. The apparatus is able to generate 150 pounds of pressure and heat a cleaning solution in 35 seconds. It has 10-horsepower capacity.

In a rubber plant it can be used advantageously for cleaning the housings of calenders, mixing mills, gears, and other parts where grease and dirt accumulates and is difficult to remove. In fact this machine was devised for that sort of cleaning in



Apparatus for Cleaning Machinery

rolling mill housings and other large machinery subject to grease and dirt, as water vapor containing cleaning compound or soap removes grease almost instantly.—Homestead Valve Mfg. Co., Homstead, Pa.

Editor's Book Table

Book Reviews

"Elimination of Waste, Simplified Practice—Automobile Brake Lining." Bureau of Standards, U. S. Government Printing Office, Washington, D. C., 1928. Paper, 12 pp. Diagram.

This pamphlet is Simplified Practice Recommendation No. 66 of the U. S. Dept. of Commerce. It outlines the history of the project, the points discussed at the general conference on automobile brake lining held at Detroit, Mich., Feb. 3, 1927, and the results of that conference. The benefits of the program described for the elimination of waste are summarized as affecting the producer and manufacturer, the jobber, wholesaler, retailer, and the consumer.

Any group in any branch—production, distribution or use—can secure the services of the Division of Simplified Practice upon request.

"Rubber Chemistry and Technology" is the title of a new quarterly, Volume 1, Number 1, which appeared April, 1928. It will be published periodically under the auspices of the Rubber Division of the American Chemical Society, Easton, Pa. Paper covers, 191 pp., 6 x 9 inches, with graphs and illustrations.

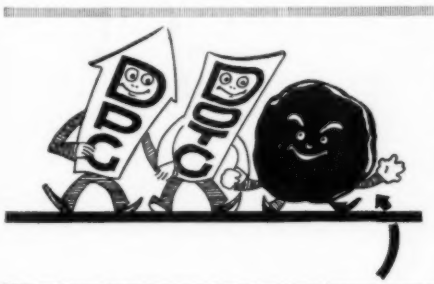
The object of this publication is to render available in convenient form under one cover all important published papers on fundamental research, technical developments and chemical engineering problems relating to rubber or its allied substances. The first number contains records of recent and future activities of the Rubber Division, gives a bird's-eye view in the form of abstracts of recent literature, presents all papers of the Detroit Meeting, contains five papers chosen from German, Italian and British journals and finally gives the recent report of the Physical Testing Committee.

Rubber Chemistry and Technology has the generous support of the Rubber Association of America, and rubber chemists will find this publication a great aid and convenience in their work as it brings to them the researches and developments in the rubber industry.

Members of the American Chemical Society who are also paid members of the Rubber Division, are entitled to receive this publication. Any other individual, corporation or organization interested, though not a member of the American Chemical Society, is eligible to become an associate member of the Rubber Division upon payment of $6.00 annually and thereby become entitled to receive this publication.

"Das Wasserdichmachen von Textitien," ("Waterproofing Textile Fabrics") by Herbert Pearson, translated into German by Dr. Paul Krais. Dresden and Leipzig, Theodor Steinkopff, 1928. Paper, 74 pp., 6 by 8¾ inches. Illustrated.

This translation is volume 18 in the series of works on chemical technology of industry edited by Dr. B. Rassow. The work by Herbert Pearson is a practical treatise by a recognized authority. The original English text was reviewed at length in these columns August 1, 1924.



D.P. and D. O.T. Guanidine out for a good time with Mr. A. Rubber Batch.

New Publications

"Report on Aero—a Low Temperature Accelerator" issued by the American Cyanamid Co., 535 Fifth Ave., New York, N. Y., contains a description of a new accelerator of vulcanization. Its properties and technical value in compounding are shown in a series of nine tables of data covering its effect in connection with sulphur, reinforcing ingredients, softeners, reclaim, crude rubbers, and its influence in retarding aging of gum stocks, reclaim and carbon black stocks.

"Fifteenth Anniversary Blue Book 1913-1928." This handbook of 324 pages, issued by the National Association of Waste Material Dealers, Inc., Times Bldg., New York, N. Y., is more than a directory of the waste trade. It contains authentic lists of names, elucidation of trade customs, specifications, etc., on the seven sections of the trade. In the scrap rubber section will be found the official classifications of the National Association of Waste Material Dealers and the Reclaimers Division of the Rubber Association of America; rules for marking scrap tire shipments; scrap rubber export and import statistics, and lists of members handling crude and scrap rubber. The book closes with the foreign trade section, an indispensable directory of essential information for the importer and exporter of waste materials.

The Omo Mfg. Co., Middletown, Conn., has issued a new catalog entitled "Bathing Accessories for the Season of 1928." It contains a large and attractive assortment of caps, belts, bags and play balls.

The Firestone Tire & Rubber Co. and **The B. F. Goodrich Co.** are the subjects in the March 14 and 21 issues, respectively, of the Standard Trade & Securities Service, published by the Standard Statistics Co., Inc., 200 Varick St., New York, N. Y. The financial position of both companies is given, together with a comprehensive survey of the activities, facilities and outlook of these concerns.

"Rubber Facts, Figures, Forecast—1927-1928" issued by Hymans, Kraay & Co., 7, Mincing Lane, London, E.C. 3, England. This annual review presents the statistics of world crude rubber production and consumption analyzed by countries. It forecasts a shortage of crude rubber for 1928 of 55,000 tons and concludes with brief discussions of synthetic rubber, restriction policy and the Netherlands, and the Civil Research Committee and the restriction problem.

"Pine Tar," an eight-page booklet issued jointly by the American Turpentine & Tar Co. and the National Turpentine Products Co., is distributed by J. C. Mathews, eastern representative, 300 Madison Ave., New York City. This pamphlet contains much authoritative information concerning the properties of pine tar suitable for rubber compounding as well as specifications and tests.

"Resistox Anti-Oxidant," issued by The Rubber Service Laboratories, Akron, O., states in about a dozen pages the characteristics of Resistox. Its value in rubber work is exemplified by much interesting data derived from tests on tire, tube, mechanical goods and other typical stocks. From this data it is evident that the field for the use of this anti-oxidant is large.

"Tuads," issued by R. T. Vanderbilt Co., 50 E. 42nd St., New York, N. Y., comprises seven data sheets showing how Tuads may be compounded to eliminate or retard scorching and air curing.

Rubber Bibliography

$\Delta^{1,4}$-Dihydrobenzene, its Derivatives and its Polymerization Products.—Fritz Hofmann and Paul Damm, *Chem. Zentr.* 1926, I, 2342-4.

A New Tetramethylbutadiene.—A. D. Macullum and G. S. Whitby. *Trans. Royal Soc. Can.* Vol. 22, pp. 39-44.

Some Derivatives of B_γ-Dimethylbutadiene.—A. D. Macullum and G. S. Whitby. *Trans. Royal Soc. Can.* Vol. 22, pp. 33-38.

The Colloidal and Elastic Properties of Poly Vinyl Acetate.—G. S. Whitby, J. G. McNally and W. Gallay. *Trans. Royal Soc. Can.* Vol. 22, pp. 27-32.

Absorption of Hydrogen under High Pressure by Rubber.—G. Tammann and K. Bochow. *Zeit. Anorg. Chem.*, 1928, 168 pp. 322-324.

Report on "Revertex." Reprinted from *Trop. Agri.*, Jan. 1928. The report concerns especially the economy in time and power in incorporating fillers in highly compounded mixings; economy in accelerators, and improvement in higher breaking load. Tables and graphs.—*Fourth Quarterly Circular for* 1927, Rubber Research Scheme, So. Kensington, London, Eng.

Standard Tires and Inner Tubes for Airplanes.—C. J. Cleary, *Rubber Age* (N. Y.), Mar. 25, 1928, pp. 657-660.

Diesel Motors in Rubber Goods Manufacture.—*Gummi-Zeit.*, March 2, 1928, pp. 1192-1194. Diagram, graphs.

Crepe or Vulcanized Soles.—E. Mayer, *Gummi-Zeit.*, March 2, 1928, pp. 1194-1196.

Sulphur Chloride Vulcanization of Thin Goods.—Dr. Rudolf Ditmar and Gustav Ballog, *Gummi-Zeit.*, March 16, 1928, pp. 1303-1304.

Fillers in Rubber Mixing.—Dr. St. Reiner—*Gummi-Zeit.*, March 23, 1928, pp. 1359-1360. Tables, diagrams.

Rubber Latex.—Friedr. W. Landgraeber, *Kunststoffe*, Feb., 1928, pp. 28-29.

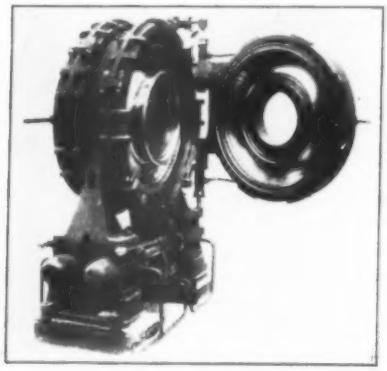
Sodium Silico Fluoride.—L. R. van Dillen, C. Knaus, G. M. Kraay, and R. Riebl, *Archief*, Feb., 1928, pp. 61-125. Tables. English version, pp. 126-154.

Economy in Rubber Industry.—Dr. A. W. K. de Jong, *Archief*, Feb., 1928, pp. 155-174. English version, 175-192. Tables.

Technical Rules for Rubber Mixings.—Dr. Werner Esch, *Kunststoffe*, March, 1928, pp. 53-55. Formulas.

English Watch Case Tire Vulcanizer

An English watch case tire vulcanizer, somewhat differently designed from others, is here pictured. The shells forming the mold are secured to the outer curing rings by bayonet joints, thus dispensing with all set screws or bolts and enabling the shells to be rapidly changed when required. The locking rings are operated by two single acting cylinders instead of the single double acting cylinder as in the usual American practice. The vulcanizer is constructed for an internal airbag pressure of 500 pounds per square inch. It is made of steel throughout and meets all the needs of standard curing practice.—Francis Shaw & Co., Ltd., Bradford, Manchester.



Shaw Watch Case Vulcanizer

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
1083	Manufacturers of wood flour.
1084	Thermoprene varnish.
1085	Machine for attaching rubber soles to galoshes.
1086	Information regarding rubber lining for use in milling ores.
1087	Who can make a collapsible (trick) bass fiddle?
1088	Rubber covers for doorknobs.
1089	Market value and importers of rubber seed.
1090	Rub-steel process.
1091	Soft red rubber cigar holders.
1092	Pitcher mats.
1093	Manufacturer of Chase stomach tube.
1094	Machines for making rubber footwear.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country	Purchase or Agency
30,258	Crepe sole rubber and tires	Augsburg, Germany	Both
30,259	Fine rubber thread	Osaka, Japan	Purchase
30,260	Tires and inner tubes	Saloniki, Greece	Both
30,261	Druggists' sundries and bathing caps and shoes	Paris, France	Agency
30,262	Tires	Alexandria, Egypt	Agency
30,263	Tires	Alexandria, Egypt	Agency
30,277	Balloons	Bombay, India	Agency
30,301	Tires	Saloniki, Greece	Purchase
30,332	Druggists' sundries	Toronto, Canada	Agency
30,354	Erasers	Cairo, Egypt	Purchase
30,357	Billiard table cushion rubber	Warsaw, Poland	Purchase
30,358	Bathing novelties	Stockholm, Sweden	Either
30,401	Bathing novelties	London, England	Agency
30,446	Overshoes	Sherbrooke, Canada	Purchase
30,447	Bathing caps and shoes	Vienna, Austria	Both
30,456	Athletic rubber goods	Durango, Mexico	Purchase
30,483	Endless fan belts for automobiles	Madrid, Spain	Agency
30,498	Surgical rubber goods and bathing caps	London, England	Both
30,532	Heels	Alexandria, Egypt	Agency
30,533	Rubber lining for printing cylinders	Munich, Germany	Purchase
30,534	Rubber shoes and clothing	Hamburg, Germany	Agency
30,535	Tires	Hanover, Germany	Agency
30,536	Hydraulic ducts for packing	Toronto, Canada	Agency
30,537	Heels	Oslo, Norway	Agency
30,541	Bathing slippers, overshoes, heels and rubber novelties	Cordoba, Argentina	Both
30,542	Rubber toys	Hamburg, Germany	Both
30,546	Industrial rubber goods	Vienna, Austria	Agency
30,589	Sanitary goods	Santos, Brazil	Purchase
30,632	Erasers, rubber bands, etc.	Stockholm, Sweden	Either
30,637	Footballs, bladders and tennis balls	Baghdad, Iraq	Purchase
30,639	Erasers, rubber bands, etc.	Temuco, Chile	Purchase

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
1886	Rubber Footwear Exports.
1892	Golf Ball Imports.
1894	Tire Exports.
1902	Mechnical Rubber Goods Exports.
1918	Rubber Footwear Exports.
1919	Tire Exports, Malaya and Far East.

An Increase of 11.4 Per Cent in The Number of Rubber boots and shoes exported during 1927 over 1926 is recorded in *Our World Trade*. The total for 1927 was 2,785,000 pairs and for 1926 2,499,000 pairs.

Rubberized Piece Goods and Hospital Sheeting Exports during 1927 rose to 2,331,000, an increase of 75.1 per cent over the 1926 figure of 1,331,000, according to *Our World Trade*.

Rims Inspected and Approved by the Tire & Rim Association of America, Inc.

Rim Size Motorcyle	March, 1928 Number	Per Cent	3 Months, 1928 Number	Per Cent
24 x 3	2,425	0.1	9,448	0.2
26 x 3	345	0.0	12,773	0.2
28 x 3	.....	....	452	0.0
Total	2,770	0.1	22,673	0.4
Clinchers				
30 x 3½	53,335	2.2	125,390	2.1
31 x 4	1,511	0.1	1,511	0.0
Total	54,846	2.3	126,901	2.1
18" Balloons				
18 x 3½	.....	....	9,362	0.2
18 x 4	152,426	6.3	345,479	5.7
18 x 4½	11,355	0.5	23,185	0.4
18 x 5	.....	....	.....	....
Total	163,781	6.8	378,026	6.3
19" Balloons				
19 x 3½	234,431	9.7	452,135	7.5
19 x 4	238,332	9.8	579,146	9.6
19 x 4½	101,425	4.4	286,498	4.7
19 x 5	.....	.....	.....	....
Total	574,188	23.9	1,317,779	21.8
20" Balloons				
20 x 3½	81,407	3.4	186,907	3.1
20 x 4	397,391	16.4	924,009	15.4
20 x 4½	30,816	1.3	127,285	2.1
20 x 5	61,581	2.7	139,505	2.3
20 x 6	5,611	0.2	36,718	0.6
Total	576,806	24.0	1,414,424	23.5
21" Balloons				
21 x 3½	56,650	2.3	163,605	2.7
2.75-21-D	596,649	24.6	1,576,932	26.2
21 x 4	70,934	2.9	231,638	3.8
21 x 4½	41,360	1.7	149,268	2.5
21 x 5	1,551	0.1	3,077	0.1
21 x 6	943	0.0	943	0.0
Total	768,087	31.6	2,125,463	35.3
22" Balloons				
22 x 3½	1,509	0.1	1,509	0.0
22 x 4	.....	....	756	0.0
22 x 4½	640	0.0	640	0.0
Total	2,149	0.1	2,905	0.0
High Pressure				
30 x 3½-23	5,974	0.2	13,917	0.2
32 x 4½-23	3,215	0.1	13,681	0.2
32 x 4-24	6,119	0.3	13,231	0.2
33 x 4½-24	.....	....	406	0.0
32 x 3½-25	.....	....	.....	....
33 x 4-25	.....	....	1,293	0.0
34 x 4½-25	649	0.0	649	0.0
Total	15,957	0.6	43,177	0.6
20" Truck				
30 x 5	196,219	8.1	461,734	7.7
32 x 6	34,769	1.4	71,930	1.2
34 x 7	11,575	0.5	24,911	0.4
36 x 8	5,345	0.2	14,501	0.2
40 x 10	154	0.0	1,413	0.0
Total	248,062	10.2	574,479	9.5
22" Truck				
36 x 7	515	0.0	1,129	0.0
24" Truck				
34 x 5	1,096	0.0	6,171	0.1
36 x 6	3,160	0.1	8,716	0.1
38 x 7	7,678	0.3	10,496	0.2
40 x 8	846	0.0	5,396	0.1
44 x 10	153	0.0	320	0.0
Total	12,923	0.4	31,099	0.5
Grand total	2,420,084	....	6,038,055	....

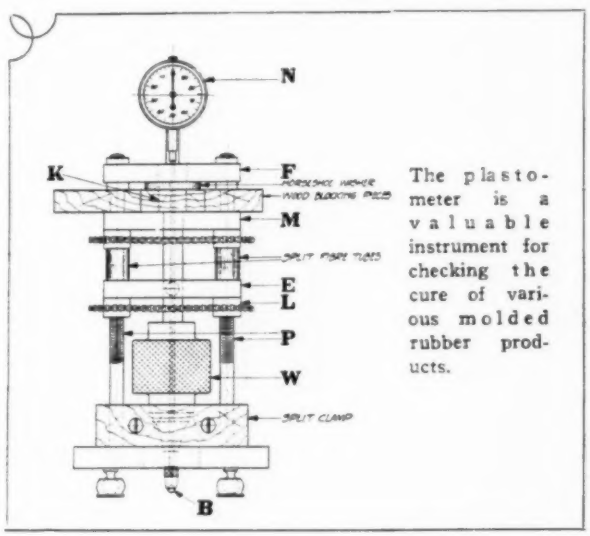
Dunlop Rubber Merger

Reports from Sydney state that the Dunlop Rubber Co. (Australasia) will merge with the Perdriau Rubber Co. A capital of 3,500,000 pounds, with an annual turnover of 5,000,000 pounds, is involved. A holding company with a capital of 6,000,000 pounds, it is said, may be formed to acquire shares of the two companies.

Operation of the Plastometer

An Instrument for Indicating the Hardness of Rubber

The customary form of plastometer is quite generally familiar in rubber goods factories manufacturing tires, mechanical and molded goods. It was designed originally for measuring the hardness of cure of rubber covered lower press rolls of paper machines, a point of extreme importance in the matter of the performance and durability of such rolls. The instrument is none the less valuable as a laboratory instrument for checking the cure of such rubber articles as valves, springs, heels, soles, sheet packing, tiling and many other molded rubber products. The plastometer indicates the hardness of such rubbers by the amount of depression of an ⅛-inch steel ball in the surface of the rubber, under 1-kilogram weight, which is measured and shown on a gage in hundredths of an inch. In this way the cure of rubber compounds can be compared closely and rapidly. The simplicity of the process is evident from the following directions for the operation of the instrument.



The plastometer is a valuable instrument for checking the cure of various molded rubber products.

The instrument is placed in a vertical position over the sample to be tested resting, for example, on a smooth hard wood table having a true flat surface so that the plastometer will be perfectly steady whether the feet of the instrument rests on a large flat sample or on the table around a small sample. The kilogram weight W must hang on the upper surface of the disk M by the shoulder K of the hollow weight shank or tube.

Lower the ball B and needle stem, by turning the lower sprocket L from right toward left, until the ball touches the test piece and the index hand of the gage N makes two complete revolutions, stopping at zero. It is essential to be certain that the weight W does not rest on the shoulder of the ball holder B. Lower the weight W by turning the upper sprocket U, from right toward left, until the weight W rests completely on the shoulder of the ball holder B, and keep on moving the sprocket until the upper side of the disk M shows a space about ⅛-inch below the shoulder K of the hollow weight shank or tube.

As soon as the weight W begins to press on the shoulder of the ball holder B it begins to depress the ball into the sample and the index hand N revolves indicating the depth of the depression in hundredths of a millimeter. When the weight is fully supported on the shoulder of the ball holder as shown by the gap between the disk M and the shoulder K, a minute is allowed to pass. At the end of that interval the gage indication is taken. The average of three such readings in different places on the sample is considered the true plastometer reading of the sample.

New Goods and Specialties

Fashion Trend in Rubber Raincoats and Footwear

Trench Coat

Popular demand for fashionable rainwear is responsible for the great variety of offerings from the manufacturers, who have succeeded in conforming these rubber garments to the latest lines and models called for by the most exacting follower of the newest styles.

Coats created from duPont Leatherette have a style and swagger which gives to them an instant sales appeal, and the white trimmed trench and all-year 'round coats illustrated are splendid examples of the adaptability of this material. These coats, which are manufactured by Ben Fligel Co., 520 Eighth Ave., New York, N. Y., are made in Chanel red, emerald green, cardinal, French blue, leather, London grey and black, and a chic little hat may be had to match. A particularly popular model from the above manufacturer is made from the new snakeskin pattern, only recently developed, with a fine coating and artproofed in the snakeskin design.

Loretta

The La Crosse Rubber Mills Co., La Crosse, Wis., has a highly specialized line of novelty gaiters and autogaloshes in a wide variety of desirable fabrics. The cuffs all have the regular overcast stitching which prevents frayed edges and decidedly adds to their appearance. The net linings are constructed with fleece toe lining to protect the toes and instep from the cold. The Loretta two-strap gaiter is one of the newest novelties put out by this company. On heavy mud rubbers, gaiters and on other items which are subjected to heavy service, reinforcements have been added which prolong the life of the overshoes.

Much care and study have been given to the design, construction and workmanship of the varied line of the Dominion Rubber Co., Ltd., Montreal, Canada. Changes and improvements have been made in the standard models and new features, patterns and designs have been added in keeping with the latest fashion trend. The consistent demand for protective footwear in decorative designs has been met by the production of the slicker which may be had in either red or blue. The color schemes are positively new in conception and place the rubber boot in an artistic class of the first rank.

Red Slicker

The best materials treated by a new process which retains all the life and elasticity of the rubber assure comfort, good looks and long wear to the footwear manufactured by The Kaufman Rubber Co., Ltd., Kitchener, Ontario, Canada, is claimed by this company. Extra strong along the sole and toe where most of the wear and breaks occur, every fiber of the tough canvas used is permeated and impregnated with pure fluid rubber which insures a moisture-proof, non-rotting base for the cured rubber surface. The overshoes are made along graceful lines with delicate matching of colors, rubber and fabric, fit snugly and smoothly with no bulging, awkward spots to mar their appearance. One of the newest models is the pictured Opera which is made in fawn jersey with overlapping tongue.

Utility Coat

Opera

Harrister Raincoats for Boys and Girls

The Harrister raincoat has been specially designed for boys and girls from the duPont Fairfield fabric, plain and alligator grained in a variety of colors. Some of the coats are fleece lined and some are of lighter weight. All are modishly tailored with hat, umbrella, or zipper bag to match.

Nanette

Gutta Percha & Rubber, Ltd., Toronto, Canada, offers this season, it is said, the most complete line of footwear which it has ever gotten together. Many improvements have been made in the staple lines, particularly in boots and lumbermen's. Beige colored soles are features on many shoes which are recommended both as to wear and appeal to the consumer. Realizing the demand for low cut overshoes, considerable study has been given to this section of rubber footwear. The range of colors has been carefully selected and every taste has been considered in making up the stock. Nanette, shown in the illustration, is made of beige wool jersey cloth with cuff embroidered in brown. Brown dome fasteners give a spat effect with a watered silk design on beige rubber on the foxing. The pictured overshoe, made in black and beige, with harmonizing heather net lining, fills the requirements of those demanding ultra stylish foot protection. It is made on a variety of lasts which permits a perfect fit for any shoe.

The two style trends that dominate the raincoat situation for spring, according to the United States Rubber Co., New York, N. Y., are the continued popularity of colored rubber coats and the demand for embossed rubber surface coats. Generally speaking, more subdued shades of blues, greens and reds are being worn, as compared with the vivid shades of a year ago.

Overshoe

Black coats seem to predominate, as against the recent wide vogue of olive in men's coats. The Naugatex sport coats manufactured by the U. S. company, are in ever increasing demand because of their fine finish. They are colored rubber coats with plain or embossed surfaces, cut on the lines of sport coats and are lined with suede to give extra warmth in cooler weather.

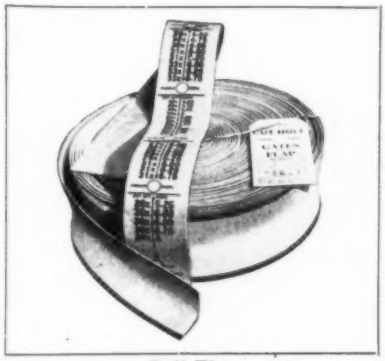
To Reduce Tire Heat

Loose tread and ply separation are eliminated by the reduction of heat in tires which is accomplished by a special rubber compound, Usconite, developed by research engineers for the United States Rubber Co., New York, N. Y. It will find its chief use in heavy duty pneumatic tires because it maintains its rubber characteristics under high temperatures.

Roll Flap with Standardized Scale

A feature of the new roll flap, marketed by the Gates Rubber Co., Denver, Colo., is the measuring scale which comes in each fifty or one hundred foot length. The scale is printed on tough paper stock designed to be pasted along the edge of a bench or counter, or on a strip of wood of the required length.

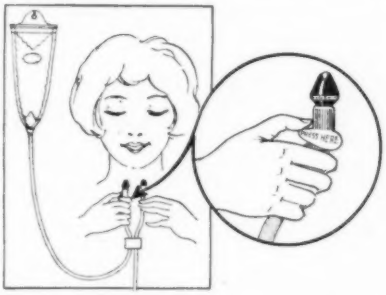
All tire sizes are listed in standardized order, according to rim diameter and cross section. The dealer lays the measuring rod alongside the flap and gets the correct length for any tire size by cutting at the point shown on the chart. The correct place to punch the hole for the valve stem is also clearly indicated.



Roll Flap

Automatic Shut-Off and Improved Nozzle

Two improvements devised to make nasal irrigation easier and more efficient



Nasal Syphon

have been added to the Nichols nasal syphon. The shut-off is simple to use, positive in control of the flow and practically fool proof. The solution is released by the simple downward pressure of the thumb, which when removed instantly stops the flow.

The new nozzle is designed to assure an even and constant flow regardless of the shape of the inner structure of the nose, eliminating the difficulty experienced when the nozzle is inserted too far into the nostril.—Nichols Nasal Syphon, Inc., 159 E. 34th St., New York, N. Y.

Ocean Bathers Use Rubber Hankies

Tucked in the belt of the new two piece swimming costumes worn this year at the French bathing beaches, is a rubber handkerchief created by a foremost Parisian designer of beach and sport apparel. It is guaranteed to remain fresh and dry regardless of the number of dips taken in the surf.

Elastic Spring Clip

Of German design, an elastic fabric clip is used as a substitute for the usual metal spring clip. It is claimed for this device that it insures greater comfort in riding and freedom from shocks because of the elastic absorption of the traction strain and force of pressure which are otherwise transmitted. It consists of six plies of heavy belting fabric, the elastic band enclosing a flexible rubber core. The clip may be built into old or new cars without alterations in construction. When it is used, an ordinary bolt is substituted for the oil spring.

De Luxe Gum Plaster

There is no loss from tissue paper sticking to the patch with the latest Vulco gum plaster manufactured by the Gates Rubber Co., Denver, Colo. This is a white skived patch of attractive appearance, made in a range of sizes both round and square. The self-curing gum is protected by Holland cloth which keeps the patch clean and fresh and is easily removed when the patch is to be applied. The gum of the patch and the square of amalgamated gum, which is supplied to fill any break in the casing to be repaired, are so compounded that no gasoline is needed to soften them before applying.

Gum Plaster

Financial and Corporate News

U. S. Rubber Co. Defers Dividend

The recent drastic decline in the price of crude rubber has made it necessary for the United States Rubber Co. to defer payment of the quarterly dividend on its 8 per cent noncumulative preferred stock due at this time, Chairman C. B. Seger announced following a meeting of the directors on April 5.

The Chairman pointed out in a letter to stockholders that the dividend was deferred because of the conditions of an indenture covering the company's 6½ per cent serial notes issued March 1, 1925. "If, as is hoped, the present situation in connection with the indenture can be corrected during the year, and the dividend is earned, there is no reason why it should not be declared later during or for the year 1928," he said.

Under the indenture, Chairman Seger explained, the company covenanted that it would not "so long as any of the notes are outstanding * * * declare or pay any dividends upon its stock of any class, unless, after * * * the payment of such dividend, the value of the current assets of the company and its subsidiary companies * * * will be equal to at least twice the principal amount of all indebtedness of the company and of its subsidiary companies at the time outstanding, including the 6½ per cent serial notes, but excluding the first and refunding mortgage bonds, the 7½ per cent secured notes and the 6 per cent gold bonds of Canadian Consolidated Rubber Co., Ltd."

Meade Rubber Co.

The Meade Rubber Co., Stoughton, Mass., reports assets, for the year ended December 31, 1927, of $341,474 and surplus, $137,000.

New York Stock Exchange Quotations

April 24, 1928

Company	High	Low	Last
Ajax Rubber, com.	10⅛	10	10
Fisk Rubber, com.	15¼	15	15
Goodrich, B. F., com. (4)	86¾	85⅛	86
Goodyear Tire & Kubber	54	52½	53⅞
Goodyear Tire & Rubber 1st pfd. (7)	94½	94	94
Intercontinental Rubber (1)	13	12¾	13
Kelly Springfield Tire, com.	22	21¾	22
Lee Rubber & Tire, com.	18	17⅞	17⅞
United States Rubber, com.	43	41¼	42¾
United States Rubber, 1st pfd.	79	78⅝	78¾

Akron Rubber Stock Quotations

April 23, 1928

Company	Bid	Asked
Akron Rubber Reclaim	17	19
Akron Rubber Reclaim, pfd.	...	100
Falls	10	12
Faultless	36	37
Firestone	181	190
Firestone, 6% pfd.	110	...
Firestone, 7% pfd.	109	...
General	168	175
General, 7% pfd.	100	101
Goodrich	85½	86½
Goodrich, pfd.	114½	115½
Goodrich, 6½s	107¼	108¼
Goodyear	53½	54½
Goodyear, 1st pfd.	95⅜	96⅜
Goodyear, 5s 28	100½	100¾
Goodyear, 5s 57	93¼	93½
Goodyear, 5½s 31	100½	101
India	34	35½
India, 7% pfd.	75	...
Mason	...	1⅛
Mason A. com.	1½	...
Mason, pfd.	5	10
Miller	21⅜	22⅜
Miller, 6% pfd.	...	86
Mohawk	121	127½
Mohawk, 7% pfd.	89	89¾
Rubber Service	...	40
Seiberling	45	45¾
Seiberling, 8% pfd.	105	105½
Star	...	1⅛

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Cambridge Rubber Co.	Pfd.	1¾% q.	Apr. 2	Mar. 26
Firestone Tire & Rubber Co.	Com.	$2.00 q.	Apr. 20	Apr. 10
Firestone Tire & Rubber Co.	7% Pfd.	1¾% q.	May 15	May 1
Fisk Rubber Co.	1st Pfd.	$1.75 q.	May 1	Apr. 16
Fisk Rubber Co.	Conv. Pfd.	$1.75 q.	May 1	Apr. 16
Fisk Rubber Co.	2nd Pfd.	$1.75 q.	June 1	May 15
Hood Rubber Co.	Pfd.	$1.75 q.	May 1	Apr. 20
Hood Rubber Co.	7½% Pfd.	$1.88 q.	May 1	Apr. 20
Hood Rubber Products Co.	Pfd.	$1.75 q.	June 1	May 21
General Tire & Rubber Co.	Pfd.	$0.75 q.	May 1	.....
Mohawk Rubber Co.	Pfd.	$10.50	Apr. 1	Mar. 29
Rubber Service Laboratories Co.	Com.	$0.60 q.	Apr. 2	Mar. 20
Stedman Products Co.	Pfd.	$1.75 q.	Apr. 2	Mar. 26

New Incorporations

A. G. Rubber Tile Co., April 18 (New Jersey), $5,000. D. Casawen and H. Steinfeld, both of 421 Teaneck Rd., Ridgefield Park, N. J., M. Lorenz, 824 Dawson St., S. Rottman, 982 E. 165th St., both in New York, N. Y. Principal office, 19 Mt. Vernon St., Ridgefield Park, N. J. To manufacture rubber products.

Bell Brassiere Corp., March 22 (New York), $20,000. E. Van Nest, H. Weisman, A. Gray, all of 1440 Broadway, New York, N. Y. Principal office, Manhattan. Rubber girdles.

Commercial Tire Co., Inc., March 16 (New Jersey), $125,000. A., O. and G. Roberts, 79 Columbia Ave., Newark, N. J. Principal office, 144 Norfolk St., Newark, N. J. To manufacture tires.

Comstock & Lyon Agency, Inc., March 29 (New York), capital stock 100 shares no par value. W. B., Jr., and W. B. Lyon, Sr., 410 Third Ave., No. Pelham, C. A. Comstock, Bonniecrest Park, New Rochelle, both in N Y. Principal office, Mamaroneck, N. Y. To manufacture tires.

Converse Rubber Sales Corp., March 26 (Massachusetts), $100,000. F. H. Caskin, president, Danvers; G. V. Claflin, treasurer, Malden; R. C. Kelley, clerk, Newtonville, all in Mass. Principal office, Malden, Mass. To deal in rubber footwear.

Duffy & Gautreau Co., March 9 (Massachusetts), $100,000. E. C. Newcomb, president and treasurer, 89 Mason Terrace, Brookline; J. M. Everett, clerk, 214 Riverway, Boston; T. F. Duffy, 22 Sacramento St., Cambridge, all in Mass. Principal office, 1735 Massachusetts Ave., Cambridge, Mass. To manufacture rubber goods.

Midwest Rubber Reclaiming Co., March 8 (Missouri), $840,000. W. Welch, president, S. G. Luther, vice president, both of Akron, O.; W. A. Hart, secretary and treasurer, East St. Louis, Ill. Principal office, St. Louis, Mo. To reclaim rubber.

Miracle Reducing Co., Inc., March 22 (New York), capital stock 100 shares no par value. S. B. Quel, G. Helfand and I. Eleff, all of 420 Lexington Ave., New York, N. Y. Principal office, New York, N. Y. To manufacture rubber articles.

Standard Raincoat Co., February 24 (Massachusetts), $25,000. S. H. Freedman, president, B. Freedman, treasurer, both of 10 Howland St., Roxbury; B. H. Chertook, clerk, 50 Summit Ave., Brookline, both in Mass. Principal office, Boston, Mass. To manufacture rubber goods.

Surpass Tire Co. of America, Inc., March 26 (New York), $100,000. F. R. Leonori, 267 Lincoln Place, H. Bonawitz, 701 Halsey St., both in Brooklyn; W. R. Meissner, 97 Water St., New York, both in N. Y. Principal office, Kings County. To manufacture tires.

Weathers Rubber Co., Inc., April 2 (New York), $10,000. H. R. Singer, 4521 16th Ave., A. Press, 1379 St. Johns Place, both in Brooklyn; S. S. Kane, 415 W. 118th St., New York, both in N. Y. Principal office, Manhattan. To manufacture rubber goods.

Rubber in Leather Substitutes

Rubber solution, glue, raw linseed oil, starch, and water are mixed with ground leather fibers and talcum powder in making what is said to be an efficient leather substitute. After the mixture is compressed, the surface is beaten wtih a wire brush again compressed, rebrushed, and when the fiber is well forced below the surface it is again compressed and finally rolled.

The Rubber Industry in America

Ohio

The General Tire & Rubber Co., Akron, O., reports an increase of 28 per cent and 40 per cent in sales and tire production, respectively, for the first three months of its fiscal year. Officials of the company believe that good business should hold during the next four to six months.

The Goodyear Tire & Rubber Co., Akron, O., was visited during the month by Major E. E. Lombard, French assistant military attaché at Washington, D. C. Major Lombard is interested in automobile tire manufacture and the organization of large companies and selected Goodyear as his field of study while in the city.

The B. F. Goodrich Co., Akron, O., observed "Yale Day" in honor of the 100 visiting members of the Sheffield Scientific School of Yale University, who visited Akron for the purpose of studying production processes in the Goodrich factory.

Firestone Tire & Rubber Co.'s activities in Liberia were shown in motion pictures to the members of the Summit Post No. 19, American Legion, at the armory in Akron, O.

The International B. F. Goodrich Corp. has sent J. W. Ferguson as its representative in Buenos Aires, and C. J. Pomeroy will represent the company in Rio de Janeiro, Brazil. Both men will remain in South America for a year, returning to Akron again next Spring.

The Lancaster Tire & Rubber Co., Columbus, O., has filed voluntary proceedings in bankruptcy. It was announced that while the heel and sole division would continue, the entire plant would be up for private purchase until May 7, and if no satisfactory offers were received, a public sale will be held May 17. Edwin Buchanan, Benson G. Watson, and Stephen A. Sharp, all of Columbus, were elected trustees.

Goodyear Industrial University students were victors in a debate with Akron University students held in the Goodyear Hall. The former took the affirmative side of the question "Should Capital Punishment Be Abolished," and the team was composed of the following men: Cecil McDonough, C. Evitt, J. Francisco and T. Gambill.

H. C. McGlothin, pit employe at the Goodyear Tire & Rubber Co., captured first honors in the factory-wide contest in spelling which was held at Goodyear Theatre. He was awarded the Goodyear Industrial University cup and a scholarship.

W. O. Rutherford, former vice president of The B. F. Goodrich Co., has returned from an extended cruise through the West Indies and a visit to several of the Pan-American countries.

Goodyear Tire & Rubber Co., Akron, O., has announced the appointment of J. A. Robertson as assistant advertising manager. Mr. Robertson joins the organization after fifteen years of successful selling and advertising experience. D. B. O'Neall, who has been with the Goodyear advertising department since June, 1925, has been selected to work directly with Mr. Hutchins, advertising manager, and Mr. Robertson, and, in his new position, will supervise the planning, preparation and promotion of all forms of dealer advertising.

J. A. Robertson

Tire Prices Unchanged According to O'Neil

William O'Neil, president of the General Tire & Rubber Co., said today that retail price of tires remained the same when rubber jumped ten cents on one occasion last year and he cannot see an early reduction in the prices as the result of the present drop in crude following suspension of the restriction act. Price of tires is 25 per cent lower today than in July, 1921, when rubber sold at 11 cents. Good weather conditions greatly increased tire exports. Use of more rubber for bigger automobile tires and normal increase in business should combine to take up slack and help stabilize rubber market. The rubber industry will be greatly benefited by the suspension of restriction. The British law was costly to American tire consumers, harmful to rubber growers and disastrous to the British. American manufacturers will be glad to pay 30, possibly 36 cents so growers can make a profit. When rubber goes below 21 cents, it will automatically restrict itself.

Goodrich Officers Reelected

At the annual meeting of the stockholders of The B. F. Goodrich Co., held April 18, 1928, the six directors whose term of office expired were reelected.

The stockholders voted to retire 11,880 shares of preferred stock in accordance with the charter provisions, and authorized an increase of 250,000 shares in the common stock without par value. They authorized the offer of not to exceed 100,000 shares of the common stock for subscription by certain employes including officers under the terms of the employes' stock purchase and profit sharing plan which was approved at the meeting.

At the directors' meeting immediately following, all the officers of the company were reelected, and a dividend of $1.00 per share on the common stock without par value was declared, payable June 1, 1928, to stockholders of record May 10, 1928, the regular dividend on the preferred stock payable July 2, 1928, having been declared at the January meeting of the directors.

Akron Rubber Group Meeting

Approximately 500 rubber chemists and technologists assembled at the Akron meeting of the Rubber Group held April 26 at the Goodyear general office dining room, Akron, O. The program was arranged by W. H. Fleming, chairman of the program committee. Dinner was served at 6:30 p. m. Dr. H. A. Winkelman, technical superintendent, Philadelphia Rubber Works Co., and group chairman presided. The general subject of the evening was, "Factors Affecting Mill Room Operation." M. W. Pickering, manager of the roll department, Farrell-Birmingham Co., Inc., who was speaker of the evening, addressed the assemblage on "Mill and Calender Roll Constructions and Internal Mixers." This was followed by four short papers as follows: "Power Loads and Factors," by P. B. Shoaff, Goodyear Tire & Rubber Co.; "Roll Speeds and Batch Sizes," by Earle Zimmerman, Firestone Tire & Rubber Co.; "Safety Caps, Housings, Adjustable Screens and Roll Breakage," by J. E. Noonan, The B. F. Goodrich Co., and "Open Mill Mixing vs. Internal Mixers," by P. T. Crisp, Miller Rubber Co.

Many valuable contributions to the rubber industry were brought out in these papers and the discussion they evoked.

Premiums for Ideas to Firestone Employes

Employes of the Firestone Tire & Rubber Co. are rewarded with cash prizes for any suggestions considered worthwhile. In a recent award over $300 in cash was distributed among forty-five whose ideas were judged the best, the largest single prize being twenty-five dollars.

President of The B. F. Goodrich Co.

James D. Tew, president of The B. F. Goodrich Co., Akron, O., has seen twenty-two years of varied and important service with the Goodrich interests, beginning on almost the lowest rung of the ladder. He was born May 2, 1882, in Jamestown, N. Y., his parents being H. W. Tew, a partner of Dr. B. F. Goodrich and a prominent manufacturer, and Susan (Goodrich) Tew. His father's ancestors were English-Scotch and his mother's, Irish-Welsh. His early education was obtained in the Jamestown schools and at St. Paul's School, Concord, N. H. He entered Harvard University in 1901 and graduated in 1905 with the degree of B. S. in mining. Having spent eight months in mining work in Mexico, he went in 1906 to Akron and took a minor position with The B. F. Goodrich Rubber Co. In 1908, he went with the Diamond Rubber Co. of Akron, and when it was taken over by the Goodrich concern Mr. Tew went with the latter and won many important promotions.

James D. Tew

Mr. Tew's first foreign experience was gained in 1910, when the Diamond Rubber Co. sent him to England, from which country he returned after a year with the original Silvertown cord tire, which, much improved, is now a notable product of the Goodrich company. For eight years thereafter he supervised production of Diamond cord tires. Under Goodrich management in 1918 he became superintendent of the entire production of fabric and cord tires, inner tubes, and accessories. Further steps in his progress were: In 1925, assistant works manager; 1926, works manager; April, 1927, director of The B. F. Goodrich Co.; October, 1927, first vice president; and January, 1928, also appointed general sales manager.

During the World War Mr. Tew was a member of the War Service Committee of the Rubber Association of America. He is a director of the Central Savings & Trust Co., Akron, O., and is a Republican. He belongs to the Akron City and the Portage Country Clubs, both of Akron, and is fond of tennis and hunting. He was married October 16, 1907, to Miss Elinor Bechtel, of Philadelphia, Pa., and has two sons, James D. and John B. Tew.

Akron's Fifty-Year Club

The first banquet of the Fifty-Year Club of Akron was held at the armory on April 19 with Frank A. Seiberling acting as toastmaster. The event was a gala one for all the old-timers who crowded the hall, greeting old friends, and reviving old memories. Amplifiers carried the speeches and entertainment to the big audience in all parts of the armory.

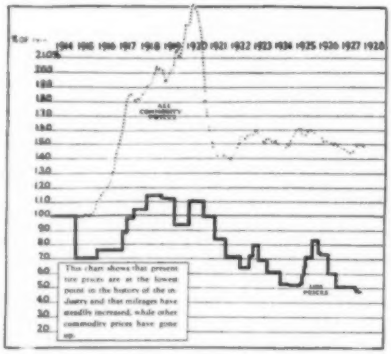
The next meeting of the club will be held at the Seiberling estate when a basket picnic may be the feature.

Block Engraving from Rubber Tile

Adding one more item to the long list of uses for rubber, Wilbur Peat, director of the Art Institute of Akron, used an ordinary rubber floor tile for his engraving "Montmarte," shown by the Ohio Print Society. It is done in a bold, old-fashioned style of wood engraving and the result gives a crude impression suggestive of the engravings of the early centuries.

Mr. Peat declares the tile is ideal for engraving as it has the advantage of never breaking, whereas a wood block, unless it is of very fine grain, will break easily. Also it can be carved with great facility.

Tire prices are the lowest in the industry's history, while mileages have steadily increased, as shown by the accompanying chart supplied by Goodyear News Service. It shows that tire prices are 50 per cent lower than in 1914 while prices of more than 400 basic commodities have increased 150 per cent during the past 14 years.


1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928
ALL COMMODITY PRICES
This chart shows that present tire prices are at the lowest point in the history of the industry and that mileages have steadily increased, while other commodity prices have gone up.
LOW PRICES

Miller's General Sales Manager

L. C. Rockhill, who on January 1, 1928, became general sales manager of the Miller Rubber Co. of New York, Akron, O., had twenty years' experience handling Goodyear products prior to assuming his newest responsibility. He was born in Canton, O., Oct. 19, 1884, and after preparing at the Canton High School attended Mt. Union College from which he graduated in 1906. While attending college he worked as a reporter on Alliance, O., newspapers from 1902 to 1906. Next he was an advertising solicitor on the Cleveland Press from 1906 to 1907. In the latter year he cast his lot with the rubber industry, entering the service of the Goodyear Tire & Rubber Co., Akron, O., and being at once placed in charge of its tire repair department.

L. C. Rockhill

During the score of years that he remained with the Goodyear concern he was successively assistant manager of the automobile tire department, manager of the aeronautics department, manager automobile tire department, manager merchandising department, being appointed as sales manager in 1919, which position he held until the end of 1927. In 1921 Mr. Rockhill was elected to the directorate of the Goodyear company.

At the annual meeting of the Rubber Association of America on January 7, 1924, in New York, he gave an address on behalf of the tire division on "Industry, Publicity, and Advertising." Mr. Rockhill is a Mason, a charter member of the American Society of Sales Executives, American Management Association, Sigma Nu Fraternity, and various golf clubs.

Medal Presented to Firestone

Friends and admirers of Harvey S. Firestone presented him with a gold medal in recognition of his services in breaking the English rubber monopoly. The presentation took place at Mr. Firestone's winter residence in Miami Beach, Fla.

New Jersey

Mechanical rubber production in the New Jersey plants continues good, with jar rings leading. Some of the plants have put on extra help on jar rings to meet the demand for the canning season. Both balloon and cord tires are reported to be increasing in production over last month. There has been a little improvement in the hard rubber situation. Factories manufacturing soles and heels announce that production is normal. Rubber manufacturers are taking advantage of the prevailing low rubber prices which enable them to average down the cost of stocks bought around the 40 cent level.

"Rubber Night" was celebrated recently at the Trenton Carteret Club by Trenton rubber manufacturers. About 300 persons were present. Prizes and novelties were distributed at the dinner, which was followed by the showing of a film on the "Growing of Rubber in India," by Clifford H. Oakley, president of the Essex Rubber Co. A. Boyd Cornell, secretary of the Hamilton Rubber Mfg. Co., headed the entertainment committee.

The Murray Rubber Co., Trenton, N. J., announces that J. M. Hower, of Boston, formerly New England sales manager, has been made special factory representative covering Connecticut, Massachusetts, New Hampshire, New York, New Jersey, Rhode Island, Pennsylvania, Delaware, Virginia, and West Virginia. E. G. Upchurch, of Montgomery, Ala., has been made factory representative covering North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Louisiana, Texas, Mississippi, Arkansas and Oklahoma. Both men have been in the employ of the company for several years.

William J. B. Stokes, treasurer of the Thermoid Rubber Co., Trenton, N. J., and Mrs. Stokes have been spending a month in Bermuda.

The Pierce-Roberts Rubber Co., Trenton, N. J., is receiving bids for a one-story factory addition, 42 by 46 feet, brick and frame. The company is operating nine hours a day in each department and expects a busy summer.

The Gladstone Tire Service Co., Inc., Trenton, N. J., has been appointed distributer for the Goodrich tires and tubes.

J. Edward Myers, superintendent of the Acme Rubber Mfg. Co., Trenton, N. J., has been elected treasurer of the William McKinley Memorial Hospital in Trenton.

Clifford H. Oakley, president of the Essex Rubber Co., Trenton, N. J., who is chairman of the Sea Scout Committee of the Boy Scouts of America, has secured the 62-foot motor ship *Ballantrae*, from Robert C. Roebling, of the John A. Roebling's Sons Co. Mr. Oakley has secured funds for operating and maintaining the ship for the next three years for the boys. The boat will be kept in the Delaware River at Trenton.

Horace T. Cook, president of the Hamilton Rubber Mfg. Co., and vice president of the Acme Rubber Co., Trenton, N. J., has erected a modern home at Mountain Lake, Fla.

William R. Dolton, factory manager of the Murray Rubber Co., Trenton, N. J., has been advanced to the position of secretary of the concern. He takes the place left vacant by the death of Harvey R. Nason.

The Luzerne Rubber Co., Trenton, N. J., announces that the hard rubber situation is showing some little improvement.

The Combination Rubber Co., Trenton, N. J., reports that the production of tires and tubes has greatly increased over last month, indicating that the summer season will be a good one. The company has opened a number of new accounts during the past month.

Whitehead Brothers Rubber Co., Trenton, N. J., reports that business in all departments continues good.

The Essex Rubber Co., Trenton, N. J., suffered a loss of about $2,000 recently when fire destroyed a large quantity of reclaimed rubber at the plant.

The Vulcanized Rubber Co., Morrisville, Pa., producer of hard rubber goods, is operating full time and the business outlook is very encouraging.

The Lambertville Rubber Co., Lambertville, N. J., which closed its plant here several weeks ago, may open part of the works again. When the plant closed the footwear machinery was moved to Middletown, Conn., but the mechanical rubber goods machinery was left here.

The Michelin Tire Co., Milltown, N. J., has inaugurated a radio program with an orchestra of fourteen pieces. The company's contract with the National Broadcasting Co. covers an entire year and the artists will be heard every Thursday night. The company is offering radio listeners a free booklet containing hints for the motorist.

The Corduroy Tire Co. claims to have shipped the first carload of tires and tubes ever received by a dealer in Hudson Co., N. J. Emil Dudrap, 4586 Hudson Blvd., Union City, was the dealer and he capitalized the occasion by bedecking the car with gaudy banners and creating an unusual lot of excitement in the town.

The Pneumatic Boat Corp., Inc., has moved its factory and offices into larger quarters at 122 Branford Pl., Newark, N. J. This move will enable the company to manufacture on a larger scale the portable Pneumaticraft boats, pontoons and life rafts.

Combustion Utilities Corp., after May 15, will be located at Linde, N. J. The present offices of the company are in Long Island City, N. Y.

President Townsend's Twenty-fifth Anniversary

Arthur Farragut Townsend, president of the Manhattan Rubber Mfg. Co., Passaic, N. J., on March 3, celebrated the twenty-fifth anniversary of his service with the company in that capacity. On this occasion the company employes presented him with tributes of their affection and loyalty.

The Manhattan Rubber Mfg. Co. was founded on January 1, 1893, by Arthur F.

W. Burden Stage

Arthur F. Townsend

Townsend, Frank Cazenove Jones, George Woffenden, Samuel Watson and W. W. Dashiell. During the first 10 years of the company's history, Mr. Townsend served in the capacity of secretary and treasurer, later as vice president and as president since the spring of 1903. Under his skillful and intelligent guidance the Manhattan Rubber Mfg. Co. has developed into one of the leading American manufacturers of standard and special mechanical rubber goods and automotive products with branches and distributers in practically every large city in the United States.

U. S. Rubber Annual Meeting

The annual meeting of the U. S. Rubber Co. was held in New Brunswick, N. J., on April 17, when the following directors were elected to the board: P. W. Dixon, George Deshler, and W. O. Cutler, who is vice president and comptroller. There was no change in the executive personnel of the company, other than the election of L. B. Gawtry to the Executive Committee vice J. B. Ford, deceased.

Bureau of Standards Tests

All government purchases of rubber goods are made on the basis of performance tests conducted in the laboratories of the Bureau. These facilities are available, without charge, to all state and municipal governments, but tests are not made for the public except in special cases where the necessary equipment is not to be found in commercial laboratories. A fee covering the actual expense is charged in each case.

New England

An anticipated price cut on the part of wholesalers and dealers has slowed up tire sales for the past two months, but since this is improbable for several months at least, due to the large inventories of crude carried by the large companies, conditions are expected to become stabilized with a consequent increase in tire and tube sales. Tire companies have been producing at or near capacity and now find themselves with large warehouse stocks. There has been a general tendency toward curtailment of operations, one company having already reduced production on the above commodities 20 per cent. Mechanical goods concerns have been going at a fair rate while production on seasonal lines such as garden hose, jar rings and material for the agricultural trade, is near capacity. Proofed goods manufacturers anticipate large sales due to the increased demand for novelty raincoats and fabrics. The hose trade which did rather poorly on staple lines but was aided by the large demand for the fashionable novelty lines of women's footwear, is now busy on summer orders. The auto topping business is quiet, due to a shift on the part of some automobile manufacturers to synthetic lines, but concerns making double texture material for sport cars are operating at capacity.

The Boston Rubber Shoe Co., a subsidiary of the United States Rubber Co., recently resumed operation in its two plants, the principal one in the Edgewater district of Malden and the other in the Fells section of Melrose, after having been closed two weeks for alterations and repairs. The Edgewater plant has been completely electrified, motor drives having been substituted for steam power which was formerly used. The company makes a general line of rubber footwear and at present is operating five and a half days a week, employing about 1,300 workers.

Charles F. Mills, vice president of the First National Bank of Boston and R. B. McGraw, treasurer of the Fisk Rubber Co., were elected to the board of directors of the Fisk Rubber Co. at the annual meeting. All members of the old board were reelected.

The Cambridge Rubber Co., footwear manufacturer of Cambridge, Mass., by printing a huge sign "Cambridge" on the roof of its plant, has the distinction of providing the first aerial sign guide in Cambridge. The plant is located two miles air line from the East Boston airport.

Vansul, Inc., distributer of rubber colors, pigments and fillers with main offices at 90 West St., New York City, recently announced the opening of a Boston office, with Theodore G. Sullivan in charge. The new office, 932 Park Square Bldg., is intended to serve the Massachusetts and New England rubber trade.

Goodyear Dealers' Sales Talk

Some 350 Goodyear Tire & Rubber Co. dealers and salesmen listened to an interesting talk on Goodyear history and progress at a luncheon at the Copley-Plaza tendered by the Boston division. W. A. Hazlett, manager of the Eastern division, congratulated the dealers on their success, declaring the entire company experienced its most successful year in 1927 and that New England's showing was the best of any part of the country. He said that present indications are that the company will make a similar showing this year, and told of the progress, comparing the number of tires sold in 1908, 35,282, to 3,790,000 tires in 1918 and 16,000,000 last year.

The C. F. Church Mfg. Co., Holyoke, Mass., announces the introduction of a new combination wood and rubber toilet seat. The new line which is black, is being marketed under the trade name "Sani-Black" as a companion product to their well-known "Sani-White" seat.

David Feinberg, president of D. Feinberg & Co., scrap rubber merchants with warehouses in Chelsea and Roxbury, Mass., was reelected chairman of the Scrap Rubber Division of the National Association of Waste Material Dealers. Mr. Feinberg was an active member of the committee which recently revised scrap rubber classifications.

The Firestone Footwear Co., formerly at 210 Lincoln St., Boston, Mass., has removed offices and stock to the new headquarters on Brookline Ave., Boston.

Daniel J. Honan, Exalted Ruler of Elks, and formerly with the Boston branch of the B. F. Goodrich Co., was presented with a handsome banjo ship clock from his former office associates as the feature event of the installation exercises of the Winthrop Lodge last week.

The State Rubber Co., Inc., has opened a new tire store at 466 Stuart St., Boston, Mass. This company will handle a full line of Falls tires and tubes exclusively.

B. H. Capen, superintendent, and F. G. Clark of the cost department of the Clifton Mfg. Co., Jamaica Plain, Mass., manufacturer of rubber clothing, left for a ten days' vacation last week. Mr. Capen is well known in the rubber trade. Before joining the Clifton staff he was connected with a large rubber plant in Taunton, Mass. N. Lincoln Greene, vice president, was on a business trip through New York State last month.

Standard Rubber Co., Mansfield, Mass., is being organized for the purpose of manufacturing high grade rubber goods.

Stedman Products Co., South Braintree, Mass., manufacturer of reinforced rubber tile, at its annual meeting elected the following officers: James H. Stedman, president; Merton A. Turner, vice president in charge of sales; Walter W. Rowse, vice president; James I. Finnie, treasurer and general manager; George W. Bailey, assistant treasurer and secretary.

The plant at South Braintree, of which William G. Brooks is factory manager, is operating to full capacity.

Wishnick-Tumpeer, Inc., has opened a Boston office at 141 Milk St., which will be in charge of Bert E. Dougherty, formerly purchasing agent for the Republic Rubber Co.

Vulcan Proofing Co.'s Sales Manager

J. C. Dunn, a prominent figure in the rubber proofed goods trade, was born February 20, 1893, in Troy, N. Y., and at the Rensselaer Polytechnic Institute in that city took a full course in chemistry, graduating in 1915. In the same

Marques Studios

J. C. Dunn

year he was engaged by the E. I. du Pont de Nemours & Co. plant as chemist and production supervisor, remaining in that position until 1920.

From 1920 to 1924, inclusive, he was production supervisor of the I. B. Kleinert Rubber Co. In February, 1924, he became a salesman for the Vulcan Proofing Co., and July, 1927, was promoted to the position of sales manager, in which position he has since remained. His experience in his line has been very diversified, including laboratory work, production and plant management, cost accounting, efficiency work, etc. He is a Mason, Royal Arch Mason, Knight Templar, Shriner (Kismet, Brooklyn.)

The Flexo Supply Co., St. Louis, Mo., manufacturer of flexible and swing joints, recently enlarged its quarters. A large increase in business is looked for during 1928, according to the president, M. M. Stone, judging by the business transacted the first quarter of the year. The Flexo pipe joints are sold to rubber manufacturers, railroads and many other industrials.

Eastern and Southern

The Grasselli Chemical Co. will retain the branch office at 347 Madison Ave., New York, N. Y., to serve the eastern territory. The headquarters of the Rubber Service Department, however, have been moved to the home office, 1300 Guardian Bldg., Cleveland, Ohio.

Albert V. W. Tallman, rubber broker, has moved his offices to 77 Broad St., New York, N. Y.

W. Armour Johnston has moved his offices from 56 Wall St. to 120 Broadway, New York, N. Y.

H. Willshaw, of the Dunlop Co. of England, returned to England on the Berengaria after a stay in this country of ten days. His visit included trips to Akron and Buffalo, Mr. Willshaw having made his home in the latter city previous to his return to England three years ago.

J. P. Devine Co., Inc., 1372 Clinton St., Buffalo, N. Y., manufacturer of vacuum driers, has been sold to the Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill., which will operate the plant as a subsidiary.

The Consolidated Products Co., specialist in used chemical and rubber machinery, is moving from the fourteenth to the sixteenth floor of 15 Park Row, New York, N. Y., where twice the office facilities will enable it to handle increased business.

George H. Carnahan, president of the Intercontinental Rubber Co., 1775 Broadway, New York, N. Y., gave a private showing last month of a four-reel picture covering the methods of gathering the shrub and preparing guayule rubber both wild and cultivated. vated.

The Omo Mg. Co., Middletown, Conn., is planning to take on additional floor space of about 16,000 sq. ft. The increase in the sale of sanitary goods, bathing caps, rubber sheeting and raincoat material has made this increase necessary.

Godfrey L. Cabot, Inc., 940 Old South Bldg., Boston, Mass., recently purchased the Standard Carbon Co., Pittsburgh, Pa. The Standard company was at one time an important producer of carbon black in the Monroe field.

Herron, Rodenbough & Meyer, Inc., has moved its offices to 50 Broad St., New York, N. Y.

Godfrey L. Cabot, Inc., of Boston, is constructing another carbon black plant in the Panhandle gas district of Texas. It is located at Pampa, Gray Co., and will have a daily capacity of 30,000 pounds of carbon black. It is estimated that this plant will cost about $450,000.

The Kelly-Springfield Tire Co. has taken out a permit for a one-story addition to its branch in Cumberland, Md., which will cost, with equipment, about $100,000.

Manufacturer of Stationers Rubber Goods

Edward E. Huber, long a leader in the manufacture of stationers' rubber goods, was born July 14, 1855, in Newark, N. J. There he was educated in private schools and by private tutors and graduated from Bryant & Stratton's Business College March 1, 1871, on the same day entering the employment of Koch Sons & Co., manufacturing stationers in Newark.

Four years later in the same city he joined the force of Eberhard Faber, manufacturer of lead pencils and stationers' rubber goods, and since 1875 he has been a forceful factor in the upbuild-

Marques Studios

E. E. Huber

ing of the Faber concern. In 1879, he became manager of the Faber factory; in 1898 secretary and director of Eberhard Faber Pencil Co.; in 1902 secretary and director of Eberhard Faber Rubber Co. He still holds the same positions in both companies, and is also general manager of Eberhard Faber.

Mr. Huber was chosen vice president and director of the Greenpoint, N. Y., National Bank, serving from 1912 to 1926; and had been for many years secretary of the New York Credit Men's Association. He was also secretary and executive committee member for several years of the Rubber Sundries Manufacturers' Association and was vice president of the executive committee of the Rubber Sundries Division, Rubber Association of America, later merged as a division of the R. A. A.

Mr. Huber was chosen president of the Village of Pelham, Westchester Co., N. Y., in 1912, serving three years; was vice president of the National Association of Stationers and Manufacturers in 1915; and was president of the Stationers' and Publishers' Board of Trade from 1922 to 1927, inclusive.

Intercontinental Rubber Co.'s Activities

Operations of the Intercontinental Rubber Co., 100 W. 10th St., Wilmington, Del., in Mexico and Sumatra were carried on without notable interference or incident. A new and improved brand of guayule rubber called "Ampar" was perfected and placed on the market during the year with gratifying results. Although not deresinated it sells at a premium over the older brands and is largely used in the inner tubes of automobile tires.

The production of rubber from the Sumatra plantation continued to increase, 3,450 acres being tapped on an alternate monthly basis. A shortage of labor, which was general throughout Sumatra, interfered with the completion of the new planting program, but 124 acres of trees were set out, bringing the total planted area up to 4,271 acres.

Guayule planting is gradually expanding in California, approximately 1,800 acres having been transplanted in February, 1928, on land either leased or supplied by the owners under so called "profit sharing" contracts. An intensive study of methods to still further improve the quality of guayule rubber has met with initial success and automobile tires manufactured from California grown rubber alone have been made and satisfactorily tested.

N. Y. Group, Rubber Division A. C. S.

The second meeting of the New York Group, Rubber Division of the American Chemical Society, was held April 25, at 6.30 p. m., at the Town Hall Club, 123 West 43rd St., New York, N. Y. About 140 were present.

After a social half hour the chemists and their guests assembled in the dining hall where group chairman Dr. W. A. Gibbons of the U. S. Rubber Co. presided at the dinner. Following this an informal talk on guayule rubber culture illustrated by a two-reel moving picture was given by Geo. H. Carnahan, president of the Intercontinental Rubber Co.

The first reel comprised the complete operations in Mexico of gathering the native shrub; its transportation to the factory; milling it to liberate its rubber content; refining the extracted rubber; and the work of packing the dried rubber for shipment.

The second reel showed the complete cycle of cultural operations of the guayule shrub in California.

The next meeting of the New York Rubber Group will be sometime this fall.

The Chester Cord Tire Corp., Chester, W. Va., which has been operating under receivership, reported production for April better than 600 tires a day. It is expected that the indebtedness of the company will be liquidated within a short time and the outlook for 1928 is most encouraging. Superior cords, the chief product, have been in good demand this spring, and indications point to steady operation of the plant.

Pacific Coast

Pioneer Rubber Mills, San Francisco, Calif., continue to be very busy and several departments are working overtime. In addition to a substantial increase being made over the first four months of 1927 in American sales, the company has scored a considerable gain in its foreign sales, especially in Europe. Sales gains are well distributed among fire and garden hose, heavy belting, battery jars, and general mechanicals. The Pioneer advertising campaign for 1928 is a much more extensive and aggressive one than any conducted heretofore and results thus far are reported gratifying. There has been no change for many months in the official personnel.

American Rubber Mfg. Co., San Francisco, Calif., reports that not only are sales for the first third of 1928 well ahead of those for the same period in 1927, but the outlook for the remainder of the year is exceptionally encouraging. All departments in the factory in Oakland are working up to capacity, and much overtime is being done in the section producing oil suction and discharge hose. The company's new specialty, a sandbag for retreaders' use and invented by President N. S. Dodge, is being made in fourteen sizes and the factory is finding it hard to keep up with a sudden demand from all parts of the country. The company recently delivered to the Union Rock Co., Los Angeles, a one-piece conveyer belt, 8 plies, 42 inches wide, and 1,020 feet long. It contained about 10,000 pounds of rubber and 9,000 pounds of cotton. Col. J. L. Dodge, general manager of the factory, and also treasurer, is now stationed with his brothers, President Dodge and Vice President George B. Dodge, at the company's San Francisco office in the Matson Bldg. Southern Sales Manager William R. Goudie has now assisting him in Los Angeles R. E. Grace as manager of municipal fire hose sales and John Wright Ihlenfeld in charge of fire protection and sand bag sales.

Durable Mat Co., Inc., S. W., Seattle, Wash., manufacturer of patented nonskid rubber mats, according to Treasurer Charles T. Lyons, is scoring considerable success, 1928 promising to far outstrip 1927, which showed nearly 40 per cent increase in sales over 1926. Sales Manager S. R. Israel has been making a merchandising trip from Seattle to Boston and on his return trip will visit the principal cities on a more southerly route. He has appointed distributers in all the states visited who will guarantee a minimum monthly volume. The United States Navy, the Coast Guard, and the Geodetic Survey services have more than trebled their use of bridge deck and state room runners. The mats are made of small sections of tire casings hinged together with galvanized spring steel wire.

Dayton Rubber Mfg. Co., Dayton, O., according to Vice President D. W. Warden, in charge of merchandising, who recently held a conference with Joe P. Schiller, Pacific Coast sales manager, reports that his company last year had the highest output quota in its history. The 1928 prospects are said to be unusually bright, with the outlook on the Coast exceptionally promising.

Natural Bitumen Products Corp., San Francisco, Calif., is marketing a rubber substitute composed, it is stated, of 60 pounds of bitumen and 14 pounds of reclaimed rubber. The bitumen is said to be of exceptionally choice grade obtained from deposits at the northern end of Great Salt Lake. While it may be used for tire treads, its chief use will be for hard rubber compositions in battery boxes, switch plates, insulation and corner plates, and it may also be used for soft rubber floor and running-board automobile mats.

Miller Rubber Co. of New York announces the appointment as Los Angeles branch manager of H. A. Price, who resigned March 1 from the Pacific Coast division of the Goodyear Tire & Rubber Co., after eleven years' service with Goodyear, of which eight years were spent on the Coast. Mr. Price has spent twenty-five years in the rubber industry, serving twelve years with The B. F. Goodrich Co., of which seven were spent as southern district manager at Atlanta, Ga.

American Rubber Producers, Inc., a subsidiary of the Intercontinental Rubber Co., and which has an extensive guayule development station at Salinas, Calif., has leased 100 acres of the Irvine Ranch in Orange county and has begun the planting of 400,000 shrubs brought from the Salinas nursery. The company recently started a similar plantation at Santa Maria, about midway between the other two, and feels confident that conditions in the newly chosen location will prove very favorable to the raising of guayule.

Firestone Tire & Rubber Co., Akron, O., announces the appointment of J. P. Patterson, Chicago sales manager, as sales head for the new Firestone Tire & Rubber Co. of California. Nelson H. Myers, of the Firestone engineering force in Akron, was recently appointed maintenance engineer at the new Firestone plant in Los Angeles. Vice President C. A. Myers of the Akron plant, who is chief in charge of construction of the Los Angeles factory, has just returned from a conference in Akron. W. L. Nielson, formerly of the Firestone Omaha branch, has joined the Los Angeles sales force. A new publicity feature has been the exhibition of motion pictures showing rubber growing and preparation and the making of tires.

Pacific Goodrich Sales Manager

Frank E. Titus, recently appointed general sales manager of the new Pacific Goodrich Rubber Co., Los Angeles, has seen twenty-one years' service in various Goodrich activities. He was born July 22, 1884, in Painesville, O., and, after being educated in a grammar school in Cleveland and the high school in Bellevue, O.,

Curtis Biltmore Studios, L.A.

Frank E. Titus

graduating in 1903, he was employed by the Nickel Plate Railroad and the Ohio Cultivator Co.

In December, 1906, he became a clerk in the engineering department of The B. F. Goodrich Co., and from 1907 to 1914 he was assistant to W. O. Rutherford, then the local Buffalo, N. Y., manager. He was appointed manager at Denver, Colo., only to return soon to Buffalo as operating manager. From 1914 to 1915 he was branch manager at Pittsburgh, and during 1916 and 1917 he was branch manager in Buffalo. Next he was made assistant manager at the home office of the foreign sales department, and later director of foreign sales.

From 1918 to 1925, Mr. Titus was vice president of The International B. F. Goodrich Corp.; he served as New York district manager in 1926 and 1927; and in 1928 came his appointment as head of sales for the new Goodrich concern on the Pacific Coast. He has been very active also in industrial cooperative work, and in 1924 was elected a member of the foreign trade division of the Rubber Association of America. Mr. Titus is a member of the Akron City, Portage Country Clubs and Masonic orders.

Los Angeles Group, A. C. S.

At the second meeting of the Los Angeles Group of the Rubber Division, American Chemical Society, to be held Friday evening, May 11, at the Mary Louise restaurant, the special feature will be a round table discussion on calendering. I. C. McIntyre of the Goodyear company will give a general talk on the subject and Arthur Kelley of the Goodrich company will explain the newest method of calendering that eliminates faults in common methods.

Goodrich Coast Factory Completed

Pacific Goodrich Rubber Co.'s new factory at Mines and Atlantic avenues, Los Angeles, Calif., is complete with the exception of the general offices, and they will be ready, it is said, within two weeks. Production is increasing daily in the 1,800 by 400 ft. factory building. The formal opening will take place May 2 and last four days. Taking part in the first day's celebration will be the Chamber of Commerce, Mayor and city council, and many county and state officials. On May 3 Rotary, Lions, Kiwanis, and other like organizations will be guests; on May 4 an East Side or neighborhood celebration will be held; and on May 5 the Los Angeles school children will have a chance to see the big tire factory in operation.

Columbia Tire Corp., Portland, Ore., which recently stopped manufacturing on account of lack of capital to carry through a large amount of spring dating orders, may be taken over by an eastern tire manufacturing concern. Negotiations to that end have been in progress and the prospects look encouraging to the creditors of the company, for whose interests the Lumbermen's Trust Co., of Portland, has been seeking to sell the tire plant and equipment for $407,000.

C. S. Dickey, general manager-treasurer, Corduroy Tire Co., Grand Rapids, Mich.; and Paul A. Polson of the Polson Rubber Co., Cleveland, O., have been recent visitors in the principal Pacific Coast cities.

Goodyear and Firestone in Los Angeles will soon have the third and fourth rubber reclaiming plants on the Coast, according to persistent rumors, the first being that of the Pioneer Rubber Mills at Pittsburg, near San Francisco, and the second that of the Pacific R. & H. Co., at El Monte, near Los Angeles, Calif.

Officials of the Goodyear and Firestone companies declare that they are not prepared to make any definite announcement yet about any reclaiming plans.

Fisk Rubber Co., Chicopee Falls, Mass., has moved its Seattle branch from 1001 East Pike St. to 959 Harrison St. William Boland is in charge.

The Oil Industry. A very optimistic outlook for 1928 in the oil industry on the Coast is expressed by heads of the largest producing companies, an opinion which is reflected in the accumulating orders being received by manufacturers of oil hose, sleeves, swabs and other mechanical rubber goods. "Conditions were never better," one oil leader states.

Inland Rubber Co., Chicago, Ill., is planning under the management of Coast Manager C. P. Turner to establish a chain of twenty-five branch stores in the Pacific region for retailing Inland tires.

Goodyear Tire & Rubber Co., Los Angeles, Calif., is still averaging over 10,000 tires daily and over 9,000 tubes, and the prospects are said to be excellent for the remainder of the summer. At the annual stockholders' meeting April 5 Cliff Slusser, vice president of the parent Goodyear company of Akron was elected to succeed Vice President Frank K. Espenhain, who had resigned. The other directors chosen were P. W. Litchfield, J. E. Jardine, J. S. Willaman, Harry E. Blythe, C. F. Stone, H. J. Young, J. K. Hough, and John W. Mapel (president).

Firestone Plant Ninety Per Cent Finished

The new Firestone factory in Los Angeles, Calif., is quite 90 per cent finished and the contractors are much ahead of their schedule. It will be ready for occupancy about the middle of June, and the opening of the big works will be fittingly celebrated. The power house and mechanical buildings are completed, and the floors and structural steel in the big main building are finished, and most of the concrete work on the walls is done. Nearly all the heavy machinery is on the ground and is being rapidly installed. The entire plant has been planned to achieve the maximum in continuous production, as well as to eliminate all possible waste in time, labor, and materials.

Botanic Garden Honors Our Editor

Henry C. Pearson, founder and editor of INDIA RUBBER WORLD, has accepted an invitation from the directors of the new 1,000-acre California Botanic Garden to plant the first rubber tree in the Forest of Fame. The planting will take place in June and many persons notable in civic, scientific, and industrial circles will be invited to attend the ceremony.

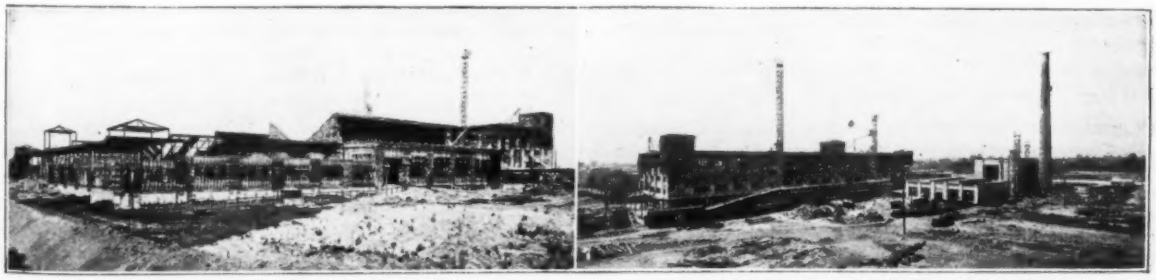
The garden, which is the largest of its kind in the world, is situated in Mandeville Canyon in the Santa Monica Mountains about seventeen miles from Los Angeles. A rubber grove is planned to raise as many kinds of rubber bearing trees, shrubs, and plants as possible under very favorable cultural conditions.

Burton Wade Rubber Co., operated by E. W. Hendrick, 717 East 61st St., Los Angeles, was almost completely destroyed by fire recently. The company made tire boots, shoes, and reliners, and had equipment for rebuilding 100 tires a day.

The A. H. Rude Co., Los Angeles, Calif., distributer for The General Tire & Rubber Co., sold $423,000 worth of tires over its own counter and through a half dozen neighborhood branch stores the past year. A. H. Rude, manager of the company, predicts 1928 sales will pass well over the half million mark.

No Immediate Cut in Tire Prices

According to Harvey S. Firestone, the removal of restriction will not immediately affect tire prices as manufacturers must carry at least a four months' supply of rubber on hand and in transit from rubber countries. Mr. Firestone, in an interview at his home in Miami Beach, Fla., expressed the belief that the action of the British will result in considerable losses but that the future is bright, as the industry is completely stabilized. He further stated that, in his opinion, America should still have its own rubber supply and be independent of foreign monopolies.



FRONT AND EAST SIDE OF MAIN PLANT — REAR OF MAIN PLANT SHOWING POWER HOUSE

The Firestone Tire & Rubber Co.'s Plant in Los Angeles, Calif., as it Appeared April 13, 1928

Akron Companies Represented at Aerial Meeting

Both the Goodyear Tire & Rubber Co. and The B. F. Goodrich Co. were well represented at the first All-American Aeronautical Exposition which was held in Detroit, Mich., the week of April 15.

Both Akron companies had large displays of airplane tires and tubes and accessories used in the planes. Goodrich exhibited one of the largest airplane tires ever made in the U. S., measuring 64 by 14 inches, and also one of the smallest, 18 by 3 inches.

Goodyear added a lighter-than-air exhibit with a model dirigible, an exact replica of the huge 6,500,000-cubic foot ship designed for the naval department, and also the famed racing balloon basket which has won more races than any other in the world, it is said.

Henry Wacker had charge of the Goodrich display, and Larry Guinther was in charge of Goodyear's exhibit.

Corduroy Tire Co. Progress

Progress made by the Corduroy Tire Co., Grand Rapids, Mich., from March, 1927, to March, 1928, has been more pronounced than for any other twelve months since the concern has been in business, according to L. A. Brown, president of the company. Daily production was nearly doubled and M. A. Marquette, factory manager, has brought all departments in the plant up to the highest peak of efficiency.

The fact that the company ships all tires direct to the dealer from the factory, and maintains no branch or warehouse at any other point, assures strictly fresh merchandise, with the average tire in the stock room never more than five days old.

The Latex Tire Co., Fond du Lac, Wis., has leased its plant to G. H. Wheatley, River Forest, Ill. Mr. Wheatley, it is claimed, will place the factory on a production basis immediately, manufacturing three lines of tires: low priced, medium priced and a high quality grade.

The Corduroy Tire Co., Grand Rapids, Mich., has placed R. R. Drake in charge of its service department. L. B. McCourt, who had been in charge of that department for the past three years, has been transferred to the sales promotion department.

Rubber Footwear for Hindus

A suggestion has been made by Professor H. Stanley Jevons, of the University of Rangoon, that cheap brown canvas shoes with rubber soles might interest the high caste Hindus. Custom forbids them to wear shoes of leather, so they go barefoot or wear rope soled canvas shoes, but there could be no objection to rubber soles provided they were guaranteed to contain no animal substance.

Canada

The new prices of rubber show practically no change from the previous year, but there is an effort by all the manufacturers to increase sales of the new lines of women's overshoes that became so popular last year. Some very attractive samples are shown and it looks as though this line will be a big factor in the shoe trade next fall.

Garden hose sales are being made and most dealers have received their stocks. Last spring being late and wet, sales were slow, but the orders received so far this spring are good. Regarding the withdrawal of restriction and the low rubber prices, one of Canada's largest rubber manufacturers stated that the crude rubber market would stabilize itself through the natural law of supply and demand, and there would be no reduction in the price of manufactured goods until next July.

Dominion Rubber Co., Ltd., recently secured an order for 17,000 feet of Keystone fire hose for the use of the Montreal Fire Department. W. A. Eden, president of the company sprained his ankle recently while alighting from his car. He has again made his appearance at the head office with the aid of crutches. Col. A. E. Massie, St. John, N. B., manager, finds business improved throughout the Maritime provinces, with a general feeling of optimism. Edwin Hostetler, secretary-treasurer of the Saskatchewan Division of the Dominion company, was recently awarded a twenty-five year service gold badge.

Chambers & Cooke, Ltd., is a new Toronto, Ontario, firm specializing in wholesaling and retailing rubber goods of all descriptions. Both partners were formerly managers of the General Rubber Goods & Footwear Departments of the Ontario Division of the Dominion Rubber Co., Ltd.

C. H. Carlisle, president and managing director of the Goodyear Tire & Rubber Co. of Canada, Ltd., stated recently that the present low price of crude rubber will result in a slight price reduction of tires about July. His company has recently opened up a tire repair school in the New Toronto plant. Other schools are maintained at Montreal, Winnipeg, Regina, and Edmonton.

Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, is now offering the Canadian trade the new Dunlop tennis ball perfected in England. The athletic association banqueted the various teams in Toronto recently. E. B. Ross recently gave a talk on the raw materials used by the Dunlop company before the Canadian Purchasing Agents' Association.

Quesnel & Frère, 352 Notre Dame St., East, Montreal, have been appointed exclusive distributers for Eastern Canada for Shuglov featherweight rubbers.

The Leyland & Birmingham Rubber Co., Ltd., Leyland, England, announces that its trade is expanding all over the world and is including Canadian and United States markets. This concern manufactures golf clubs, bags and a general line of sport equipment including shoes.

Federal Rubber Co., Ltd., will move from Wingham to a factory formerly occupied by the Canadian Vickers Co., in Stratford, Ontario, the business having been purchased by G. L. Griffith & Sons, Ltd. F. W. Willis is being retained as manager and the company which makes rubber articles and heels will resume operations in the new plant about June 1.

E. A. Edmunds, for twenty-five years traveling salesman for White Shoe Co., Toronto, Ontario, is now with the Northern Rubber Co., Ltd., Guelph, Ontario, covering Central and Northern Ontario, the City of Toronto and vicinity. He will have charge of the Toronto branch which the Northern company contemplates opening soon.

C. A. Joslin, of the Panther Rubber Co., Ltd., Sherbrooke, Quebec, is chairman of the Relationships Committee of the Sherbrooke Branch of the Canadian Manufacturers' Association.

Canadian General Rubber Goods Co., a subsidiary of Hayes Wheels, Ltd., & Forgings, Ltd., Chatham, Ontario, has taken over the factory of the Victoria Wheel Co. at Galt, Ontario, and will reclaim rubber and manufacture bathing caps, aprons, gloves and auto topping. The company will also manufacture Kleinert's rubber specialties on a cost plus basis.

Canadian Tires Cheaper Than U. S. Tires

W. A. Boys, representing the county of North Simcoe in Ottawa, states that some automobile tires are cheaper in Canada than in the United States. "If the suggestion is that the tariff is a tax, and raises prices, and that the manufacturer here takes advantage of the tariff, would you not expect to see his price at least 25 to 35 per cent higher than the American price for the same article? I have here a list of every tire which is made in this country and there is not one in the whole list which shows a higher price to the extent of even 10 per cent. Take a 30 x 3½ tire and the United States price for that tire—I am now giving the dealer's prices—and the United States price to dealers is $8.13. That same tire is made and sold in Canada for $7.16. It is made from the same patent, the same molds, and under the same specifications. . . . ."

Obituary

Well Known Factory Manager

Edmund L. Stimson, who died on Sunday morning, April 15, at the St. Francis Hospital, Trenton, N. J., at the age of fifty-two, was a well-known and unusually capable rubber manufacturing executive.

Mr. Stimson entered the service of the Cleveland Rubber Co. in 1893, later and since known as the Cleveland Rubber Works

E. L. Stimson

of the U. S. Rubber Co. He served 26 years with that company and rose to the position of general factory manager of the plant. Two years ago he became the manager of the mechanical goods department of the Essex Rubber Co., Trenton, N. J., which post he occupied at the time of his death.

Funeral services were held in Trenton at the funeral home of Ivins & Taylor, the interment taking place in Princeton, N. J., where he has made his home for the past year. His wife and daughter survive him.

Mr. Stimson was widely known throughout the rubber trade. His ability and skill as an executive were unusual. His fidelity, integrity, and kindliness, an example to all who came in contact with him.

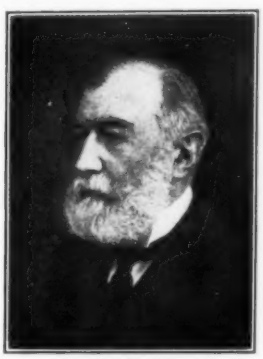
Dean of Rubber Financiers

James Bishop Ford, vice president of the United States Rubber Co., noted philanthropist and sportsman, died of pneumonia at his apartments in the Hotel Mansfield, New York, March 29, at the age of 84. The funeral took place at St. John's Church, 216-220 West 11th street, March 31, and interment was in Woodlawn Cemetery.

Mr. Ford was born in New Brunswick, N. J., but had spent most of his life in New York. He was a graduate of Peekskill Military Academy, and a few years ago gave his alma mater $400,000. He also made generous gifts to the American Geographical Society, of which he was vice president when he died, and to the Heye Museum of the American Indian, of which he was a trustee. Like his father, John R. Ford, he became early interested in rubber manufacturing, and did much to promote the important rubber spreading process invented by Christopher Meyer.

Mr. Ford was a noted yachtsman, and on March 7 was elected Commodore of the Larchmont Yacht Club for the fourteenth term. He had been a member since 1888 and senior flag officer since 1915. Despite his years, he continued at the helm of his flagship, Varuna. He also owned the yacht Katrina and the racing yacht Blue Jacket, with the latter winning the Victory Class championship several seasons. He was also active in the New York, Eastern and Camden Yacht Clubs. Since 1926 he had been president of the Explorers' Club of New York, and was also a member of the Calumet and National Arts Clubs.

Mr. Ford never married. He took a lively interest in hospital, charitable, and educational work and made generous gifts to many institutions, notably Rutgers University in his native town. He was ac-



James B. Ford

tively associated with the Atlantic Coast Lumber Corp., the New York & Queens Electric Light & Power Co., American Bank Note Co., and U. S. Rubber Co. subsidiaries.

Pioneer Rubber Manufacturer

Thomas Alexander Forsyth, one of the pioneer American rubber manufacturers, died at his apartments in the Hotel Touraine, Boston, on March 28. Starting as an office boy, he became president of the old Boston Belting Co., retiring from that concern after 51 years' service when, in 1917, it was merged into a new corporation.

Of distinguished Scottish ancestry, Mr. Forsyth was born in Brookline, Mass., and educated in the Roxbury public schools. At fourteen he entered the belting works in Roxbury and early exhibited exceptional competency, improving on processes and machinery and obtaining various patents. Placed in executive positions his administration was soon marked by a rapid and substantial expansion of the business. With his success came broad philanthropy as evidenced in the founding by him and his brother, the late John Hamilton Forsyth, of the Forsyth Dental Infirmary for Children in Boston's Fenway, said to be the first institution of its kind in the world, and which now has a $2,500,000 endowment. With his brother he also donated a beautiful baptistery and magnificent stained glass windows as family memorials to St. James Church, Roxbury. In 1917 at a dinner given to him by over 500 dentists from all parts of the country he was given a silver loving cup and elected an honorary member of the Sigma Delta Sigma Fraternity, the first outsider to be so honored in fifty years. Later the Uni-

Thomas A. Forsyth

versity of Pittsburgh made him an LL.D. In the same year on retiring from the Belting company, his oldtime employes gave him a dinner and a silver loving cup.

Mr. Forsyth was a member of the Boston Art Museum and the Boston Art Club, vice president of the Forest Hills Cemetery Corp., and a member of the Board of Overseers of the Poor, Boston.

James Farrington

After an illness of three months, James Farrington died March 22 in his fifty-fourth year. He had been a salesman for The Textile-Finishing Machinery Co. of Providence, R. I., for sixteen years.

Born in England, January 14, 1875, Mr. Farrington came to America at the age of seven years and was educated at the East Greenwich Academy, followed by special chemistry courses at Brown University. With the exception of a few years spent in Connecticut, he had been a resident of Providence all his life.

Mr. Farrington was a 32d degree Mason and was a member of the Shrine Band when it was organized some years ago. He is survived by his wife and one son, William U. Farrington.

Moses B. Matthews

Moses B. Matthews, of Lambertville, N. J., and for many years employed as a shipping clerk at the plant of the New Jersey Rubber Co., Lambertville, died at the age of 72 years, on April 10, at his home after a lingering illness. The burial was in Lambertville.

Harold S. Barwis

Harold S. Barwis, of 212 Rosemont Ave., Trenton, N. J., died recently after a lingering illness, aged 47 years. Mr. Barwis was purchasing agent of the Essex Rubber Co. for several years, and well known in sporting circles, being at one time identified with a semi-professional baseball team. He was the son of the late Dr. Elmer and Harriet A. Barwis, and affiliated with the Elks and Masonic fraternities. He is survived by his widow and one son. The interment was in Greenwood Cemetery, Trenton.

Thomas Anthony Jordan

The death on March 29 of Thomas Anthony Jordan removes an old and valued employe of the United States Rubber Co., who had been associated with the concern for the past thirty years.

Mr. Jordan was in his fifty-second year and was born in Seymour, Ind., of Irish parentage. He received his education at the grade schools and was employed for eight years with the Baltimore & Ohio and N. Y. Central Railroad Co. He first entered the employ of the G & J Tire Co. in 1898 as a bicycle tire builder, and in 1905 was made inspector of his department when the plant became a part of the U. S. organization. Subsequently he was made foreman of the department, general factory foreman, assistant superintendent and in 1918 became superintendent of the factory.

Interment took place on April 2.

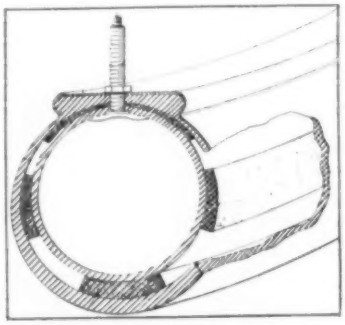
Edmund W. Kendall

Edmund W. Kendall, a well known figure in the rubber manufacturing and electrical trades, died at his home in Cambridge, Mass., on April 7. At the time of his death Mr. Kendall was manager of the tape department of the Clifton Mfg. Co., at Jamaica Plains, Mass., having taken the position but a short time before his death. He came to this city from Syracuse, N. Y., where he held the position of general sales manager for Pass & Seymour. He has also been in the sales department of the Westinghouse Electric Mfg. Co., and actively participated in the Electric Trade Association activities.

Mr. Kendall was taken ill while on a trip to New York City and on his return was forced to take to his bed. His illness soon developed into pneumonia and his death followed about four days later. Burial was held at his former home city of Syracuse, N. Y. He is survived by his wife.

A Novel Pneumatic Tire

An inner tube and casing combined which will provide greater resiliency, be practically punctureproof and which, according to the inventor, can be marketed as cheaply as a separate tire and tube, is disclosed in a recent patent.[1]



Double Tread Tire

The construction of this combined tire and inner tube represents a new idea in tire building as the inventor proposes to make use of sponge rubber in retaining the desired resiliency and also as an aid in preventing punctures. The casing appears to be of conventional design and to fit existing rims except that there is no circumferential opening between the beads, this space being filled in and making a solid base. The inner tube is to be made thicker than a standard tube in order that it will not become unduly expanded under inflation, the reason becoming apparent in noting the method of placing the tube in the casing. The tube does not come in direct contact with the casing at any point, being positioned eccentrically by means of sponge rubber strips or pads placed circumferentially between the inside of the casing and the tube.

These strips of sponge rubber are four in number and of varying thicknesses. The thinnest strip is placed around the inside of the casing in about the same relative position as is occupied by a tire flap. The thickest strip or pad is to be built in between the inside of the tire at the top and the top of the inner tube. Similar strips are built in on opposite sides of the tube at the sidewall. These strips are wedge shaped and help to hold the tube in a position eccentric to the inside contour of the casing. These strips are vulcanized to both the tube and the casing, the claim being that movement of the tube and consequent chafing are eliminated. Air spaces between the four strips are said to provide greater resiliency and at the same time to practically prevent punctures.

In building the tire it is proposed to first attach the four sponge rubber strips or pads to the tube. This is then inflated to the desired pressure and the tire built around it. The tube, strips and casing are vulcanized together to form an integral unit.

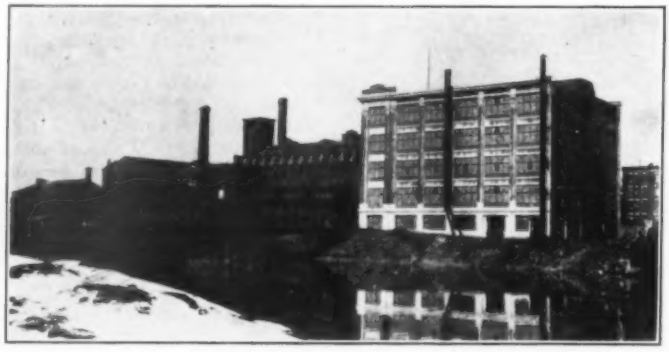
[1] U. S. Patent No. 1,643,195.

Invents a Rubber Recovery Process

Dr. José L. Navarro, of Mexico City, and now of 4419 S. Figueroa St., Los Angeles, Calif., has invented a process whereby he states he is able to extract through an acid treatment fully 95 per cent of pure rubber from commercial scrap and at a cost not exceeding that of ordinary reclaimed rubber. Samples of the new material are about to be given exacting tests in the laboratory of one of the largest rubber factories in the Southwest.

Tire Simplification

At the March meeting of the directors of the National Automobile Chamber of Commerce, New York City, the tentative reduction in the number of automobile tire sizes from 24 to 16 was unanimously approved. A suggestion was also adopted that the Rubber Association of America and the Society of Automotive Engineers reach an early agreement on what the sixteen proposed uniform sizes are to be.



General Laboratories of U. S. Rubber Co., Passaic, N. J.

New Laboratories of U. S. Rubber Co.

The United States Rubber Co. has moved its general laboratories, formerly situated at 561 West 58th St., New York, N Y., to the new factory recently purchased at Passaic, N. J. This five-story brick building, on Second St., between Dundee Canal and the Passaic River, was occupied by the General Silk Importing Co. until its shut-down three years ago. It will become a part of the N. Y. Belting & Packing Co.'s plant, subsidiary of the U. S. Rubber, and will be used for general laboratory purposes.

The Rubber Industry in Europe

Great Britain

Restriction Abandoned

The gloomy forebodings of those who felt that the appointment of the Civil Research Committee to investigate restriction presaged the removal of the measure have come true. Premier Baldwin evidently likes to deal in surprises, for hardly had the rubber industry got time to get accustomed to the sudden decision to have the Stevenson Scheme examined than he flung forth his second bolt, nothing more nor less than the plain statement that restriction would be removed as from November 1, 1928. Small wonder that people are talking of the betrayal of the rubber industry by the government! Particularly as whenever the question of the abandonment of restriction had been touched on, the majority of persons had always declared themselves in favor of gradual removal. The present move is considered more dangerous than if the scheme were taken off immediately as it is feared that the opportunity will not be lost by estates to build up stocks to put on the market the minute the working of the scheme stops, and this, on top of an already badly sagging market, may have a most disastrous effect.

However, it is just possible that the rather drastic measure of the Premier may have a healthy reaction and thus prove a blessing in disguise, and necessity may force the industry to take steps to safeguard itself that will prove to be more beneficial and more sound than the restriction scheme which, when the best has been said for it, was badly crippled from the outset.

Institution of the Rubber Industry

On March 1, 1928, the Birmingham Section of the Institution of the Rubber industry held its annual dinner and dance. Among those present was Sir George Beharrel who made an interesting speech in which he discussed facts relating to the wear of tires. It is often asserted, he said, that tires today are not as good as they used to be, but the fact of the matter is that tires are really better, but the strain on them is much greater due to higher average speed of cars, greater acceleration and improved braking power. The tread wear of a car run at 40 miles an hour in a temperature of 40 degrees would be 50 per cent higher than when a car was run at 20 miles an hour in the same temperature. As for braking power, when a car stops every quarter of a mile, half the tread was worn away in 1,080 miles, but if the stops were made every mile, half the tread would not be worn away before 3,100 miles had been covered. Again, while the difference in circumference of two wheels, one 28 by 5.25 and the other 31 by 5.25, was only 9½ per cent, the difference in wear under identical conditions was 22 per cent due to the greater frequency with which the smaller wheel hit the road.

On March 13, R. P. Dinsmore, chief chemist of the Goodyear Tire & Rubber Co. Akron, O., lectured before the Institution of the Rubber Industry on "Scheme of Accelerator Classification."

The Sixth Annual Dinner of the Institution was held on April 26, 1928, in the Crown Suite of the Connaught Rooms, Great Queen St., London. The president, the Right Hon. Lord Colwyn, P. C., presided, and the guest of honor was the Right Hon. Sir Eric Geddes, P. G., G. C. B., G. B. E.

Rubber Industry Bill

The Rubber Industry Bill has now passed its second reading in the House of Commons, but its fate is still a matter of uncertainty as the votes in favor exactly equalled those against it. There seems to be no opposition to the principles of the measure but rather on matters regarding the privacy of trading, so that there is a possibility that it may eventually go through.

Dutch Delegation

A Dutch delegation, headed by J. N. Burger, well-known director of numerous rubber estates in the Dutch Colonies, and P. van Leeuwen-Boomkamp, of the Rubber Cultuur Mij. "Amsterdam," one of the biggest rubber enterprises in the world, has arrived in London to confer on the possibility of cooperation between Dutch and British producers.

It is also proposed to visit America with the idea of consulting American interests. While the Dutch quite evidently realize that the present situation in the rubber industry calls for some kind of action, they are frankly anxious to avoid anything that may make a bad impression in the United States, for America is not only a big customer for rubber and other products from the Dutch tropical possessions, but also imports large quantities of products from Holland itself.

British Notes

Tire patching rubber sheet imported into the United Kingdom will be exempt from the 33⅓ per cent duty, but if cut into pieces ready for use, will be dutiable, according to a recent customs decision. Tire repair outfits containing only a tube of solution, a canister and rubber sheeting not cut up into pieces, are also exempt, but outfits which include a spare valve cap, screw, springs, or any item which may be considered as a tire part or accessory, or kits containing rubber patches cut ready for application, are liable to the 33⅓ per cent duty.

W. W. King, director of Typke & King since its inception, has severed his connection with that concern and intends to devote all his time to the affairs of W. Harrison & Co., Ltd., 16, Mincing Lane, London, E. C. 3.

Rubber production of the British Empire in 1921 was 203,000 tons, of foreign countries, 97,000 tons, total, 300,000 tons. In 1927 the restricted output of the British Empire was 344,000 tons, that of foreign countries 258,000 tons, total 602,000 tons. These figures are partly estimated and are not guaranteed to be strictly accurate.

Herbert Wright was presented with an ebony and silver casket by the Old Students of the Royal College of Science at their annual dinner held on March 6, at Imperial College Union, South Kensington. In the casket were two books bound in morocco, one containing an illuminated address and the other 200 autographs of old students. Among those present on this occasion, was E. Macfadyen, president of the Rubber Growers' Association, who spoke of the early work of Mr. Wright in connection with rubber plantations and of his writings on the rubber industry.

The Frank Meyer medal for distinguished service in plant introduction was awarded to H. N. Ridley, F. R. S., F. L. S., formerly director of the Singapore Botanic Gardens, in recognition of the important part he played in the early years of rubber plantation in the East. It was chiefly due to his efforts and foresight that the work of Sir Henry Wickham in bringing seed from Brazil and of the Royal Botanic Gardens, Kew, in raising plants from the seed and sending them to the East, bore fruit and eventually resulted in the vast rubber plantation industry we know today. The presentation was made on March 14 by the American Consul General, Horace Lee Washington, on behalf of Dr. David Fairchild, president of the American Genetic Association, to whom the award is intrusted by the Office of Foreign Plant Introduction, United States Department of Agriculture.

Mr. and Mrs. Henry Ford were the guests of honor at a dinner given by the American Society in London at the Savoy Hotel on April 11. Among the company of more than 200, were Prince George of Greece, Harvey S. Firestone, Jr., the Lord Mayors of London and Southampton, Dean Inge, Sir Felix Pole, of the Great Western Railway, and Sir George Beharrel, president of the Dunlop Rubber Co.

Germany

Leipzig Fair

The Leipzig Spring Fair just held has been characterized as one of the most successful, if not the most successful, fair held here since the inflation period. There was a notable increase in the number of visitors who attended primarily with the intention of buying. Foreigners from different parts of Europe were well represented. French and Belgians once again took a lively interest in the fair and large numbers of buyers from the United States were also observed. Among local buyers, unusual activity was reported from the very outset. Probably the most noteworthy feature of the operations at the fair was the fact that price no longer seems to be the determining factor in transactions, and that more regard is paid to quality. This was the case particularly in respect of local demand and is hailed as a good sign of a return to healthy business conditions.

This of course applies equally to rubber goods, for which there was a good demand. This was particularly noted in the surgical goods line, and the demand for seamless goods from Turkey and the Balkan States was especially encouraging. The Northern European states apparently were more interested in goods for medical purposes. The sponge rubber section did fairly well, but unfortunately there is a tendency among manufacturers of sponges and sponge rubber mats to undersell each other, so that if some agreement as to prices is not arrived at, the article will suffer. With regard to mats of sponge rubber, more propaganda in Germany itself is required to increase the demand, which at present is rather limited. Bathing accessories as usual did very well, as also did novelties, toys, and sporting goods. Trade in tennis balls was rather depressed by strong foreign competition, which even affected the home demand to a large extent. On the other hand made-up goods of rubber wearing apparel reported a fair demand, as did technical goods, particularly transmission and conveyer belts.

Novelties at the Fair

The center of attraction at a German exposition of rubber goods is usually the novelty department, and this fair was no exception. A variety of articles for different purposes was displayed and most of them were very well received. Thus Flügel & Polter, Leipzig, have a new floating device called "Siesta in the Water." This is a frame of inflatable rubber tubing, with cross belts so arranged as to permit full freedom of the arms while offering pleasant and secure support to the body in the water. The head end of the frame is somewhat wider and raised so as to afford a firm and comfortable rest for the head.

A variety of colorful bathing caps and the new "Gloria" slip over rubber shoe were displayed by the Vereinigte Berlin-Frankfurter Gummiwaren-Fabriken Berlin. This rubber shoe leaves the heel of the ordinary shoe free, but completely covers the rest. It is close-fitting, very good looking and put out in all the fashionable colors. The above firm also scored a success with a new inflatable balloon which is decorated to represent the various human races. These balloons made an instant hit and are to be seen everywhere in Leipzig.

The Vulkan Gummiwarenfabrik Weisz & Baeszler A. G., Leipzig, had on view a new glove for technical purposes made of a high grade velvety soft rubber that hinders movements as little as possible. They had besides a very good assortment of bathing caps.

Zieger & Wiegand, Leipzig, excels in novelties and this time had pears, heads, and reliefs in rubber, the latter showing to what a remarkable degree of fineness rubber can be worked.

M. Steinberg, of Cologne, had some unusually attractive bathing caps and sponge bags of marbleized rubber.

Handsome sponge rubber mats were on view at the stand of the Continental Caoutchouc-und Gutta-Percha-Compagnie, Hannover, as well as of Belinde Werke A. G. A collapsible, rubberized basin and good-looking as well as practical fitted week-end bags for men formed part of the display of Gustav Berlinger & Co., Stuttgart, while the Dusseldorfer Gummiwerk Theiler & Seeberger G. M. b. H., featured a high grade bath brush of rubber which can be used for wet or dry massage.

Other Features

The rubber propaganda section put out by the German rubber manufacturers in cooperation with the Rubber Growers' Association and the International Association for Rubber and other Crops in the Netherlands East Indies (the Hague), attracted a good deal of attention and brought home to the German public in a striking manner the manifold uses of rubber for every day purposes. Most of the exhibits were of German origin.

For the first time, Leipzig at the same time devoted a separate section to automobiles and accessories. A number of rubber manufacturers took advantage of this show to arrange a collective display of their tires. Other rubber goods which find a use in the operating of motor vehicles were also on view.

German Notes

The Blödner & Vierschrödt A. G., Gotha, celebrated the 50th year of its existence on March 16. The firm was founded in 1878 by two young men, Oscar Blödner and Hermann Leopold Vierschrödt, who from small beginnings, succeeded in working up an enterprise that now employs 800 persons. At first only fire hose was manufactured but by degrees rubberized hose for various purposes and later on all-rubber tubing and hose were produced as well. While the firm at the outset produced chiefly fabric hose lines, rubber goods now predominate and include, besides the above articles, mats and matting, packing, jar rings, gloves and aprons for acid factories, rubber bands, hat bags, and the like. The original founders are both dead, and the business is now under management of Hermann Vierschrödt, a son of one of the founders, who is general director, and directors Alfred Geiersbach and Traugott Seeber.

Solid tires, it is reported, will be prohibited by the government for general use. Instead of these tires pneumatics will have to be used, while for trucks over three tons cushion tires will also be permitted. Solid tires will be allowed in a few exceptional cases.

The International German Aircraft Exhibition, for the first time since the war, will take place in Berlin from October 7 to October 28. Unlike similar expositions held in recent years in Milan, Prague, Copenhagen and Paris, nothing in the nature of war material will be shown. Instead all kinds of craft for peace purposes, motors, accessories, and all industries connected with aeronautics as well as air communication and research of all lands will be represented.

France

The Michelin company, it is learned has obtained a concession covering 5,494.83 hectares of lands situated in the province of Bien-Hoa, Cochin China, intended for the planting of Hevea.

Etablissements Bognier et Burnet have decided to raise their capital from 3,600,000 francs to 4,200,000 francs. A dividend of 16.66 francs per share was turned out.

Etablissements Hutchinson have increased their capital from 30,000,000 francs to 36,000,000 francs by the creation of 20,000 shares at 300 francs each.

In an article on guayule appearing in a recent issue of the *Revue Generale du Caoutchouc*, the writer suggests that the French follow the example of the Americans and try to grow the crop in Morocco where, he points out, the climatic conditions are the same as those in California. This is particularly true of lower Morocco which has the same type of soil and the same rainfall, the same latitude and the same oceanic climate. He further reminds his readers that it was in this very territory that cane sugar and cotton were grown when Morocco was at the height of its glory.

Selling Pool

William Ormsby-Gore, who is now visiting Malaya in an official capacity, urged British planters to organize a rubber selling pool and to give all their attention to the development of a high-yielding strain of rubber tree. In a statement made to planters and officials of Perak, he said that the restriction scheme, though it had been very useful, had led to greatly increased use of reclaim in America and had stimulated planting in countries where restriction was not in force. Hence the inquiry into the Stevenson Scheme ordered by the Prime Minister.

The Rubber Industry in the Far East

Malaya

Dr. Cramer Engaged by Dunlop

Dr. P. J. S. Cramer has recently left the Dutch East Indies to go to Malaya as he has been engaged by the Dunlop Plantations, Ltd., Malacca, where he will act as scientific adviser to the general manager and, it is reported, will inaugurate the opening up of 10,000 acres in budded rubber by a scientific system involving the use only of selected and improved material.

Dr. Cramer, it will be remembered, first thought of the application of a system of bud grafting for Hevea in 1916 and in 1917 instituted experiments in the Dutch East Indies. Until recently he was connected with the scientific staff of the Netherlands Government in Java, where he investigated the possibilities of bud grafting not only for rubber, but for other crops like coffee, sugar, kapok, etc. When Dr. Rutgers was appointed Governor of Surinam, the office of Minister of Agriculture of the Dutch East Indies vacated by him was offered to Dr. Cramer, but the latter declined and later on resigned from government service in order to accept his present appointment.

Science Discredited

In the course of the newspaper debates on the rubber problem, J. S. M. Rennie, one of the foremost advocates of control for rubber, centers his attack chiefly against statements by P. M. Robinson, mention of which was made in these columns last month. Returning to the fray again, Mr. Rennie attempts to explode the fiction of cheap rubber, as he calls it. Taking pains to show that the average all-in prime cost is in the neighborhood of 10½ pence per pound, he goes on to prove that the necessary selling price cannot well be below 1 shilling 7 pence to 1 shilling 9 pence per pound, thus—prime cost, 10.50 pence; interest on capital at 10 per cent, 5:50 pence; amortization of capital cost, 2.75 pence, together 18.75 pence.

Another point, brought forward by those who talk of cheap rubber is that scientific methods would result in greatly increased outputs in new areas and reduced costs. But Mr. Rennie is very sceptical about this. We have now an asset costing £150,000,000, to £200,000,000 to create, he says, and which is capable of producing rubber at a selling price of 1 shilling 9 pence over a long series of years, and he asks whether this important asset is to be scrapped in order to make way for a new and untried industry.

Rubber Control

Discussion of the pros and cons of restriction or other forms of rubber control continues unabated at meetings and in the press. At a recent meeting of the Planters' Association of Malaya, a resolution was passed to the effect that the reversal of the policy of rubber control would inevitably result in a long period of acute depression in Malaya and a permanent setback to its prosperity. The meeting also expressed its grave concern at the possibility, indicated in the Secretary of State's telegram, that a decision on the whole question of rubber was contemplated within the period of a few weeks, and desired to protest emphatically against any curtailment of the time which is obviously necessary for adequate investigation of the varied aspects of the problem.

Questionnaire Results

The Singapore Chamber of Commerce had sent out a questionnaire on rubber restriction to 119 members. Replies were received from 72 and the result was as follows: Ten members were in favor of continuing restriction in its present form; fifteen were in favor of modification of the present scheme; forty-seven were in favor of the removal of the restriction scheme, and of this number, twenty-two favored removal unconditionally or immediately, eight favored removal if the Dutch would not cooperate, and seventeen favored removal within a period of varying length.

Planters' Suggestions

The Central Perak Planters discussed the question of restriction at a meeting and generally decided in favor of retaining it providing the plan is revised and based on stocks instead of on prices. The following plan was submitted to the Planters' Association of Malaya:

To appoint a Controller of Rubber Supplies with a full statistical staff empowered to hold stocks, being a buyer from the producers only at a fixed price, the difference between buying and selling price to pay for expenses and interest; also with power to restrict exports according to the rise and fall of stocks; the price for buying and selling to be fixed by a committee in which producers dominate; this control gradually to develop into a selling agency by bringing the manufacturers and producers into close touch.

Ceylon

Planters' Report

The annual report of the Ceylon Planters' Association for 1927, comments on the disappointment caused by the failure of the restriction scheme to fulfill what was expected of it and the fact that despite successive reductions of the exportable allowed, quotations remained below the pivotal price.

During the four quarters of the fifth restriction year the allotments and the average prices in London were as follows:

Quarter	Average Price	Exportable Percentage
November to January....	1s. 7. 265d.	80
February to April.....	1s. 7. 769d.	70
May to July.....	1s. 6. 165d.	60
August to October.....	1s. 4. 605d.	60

The average exportable percentage for the calendar year 1927 comes to 64.17 with the average price of top grades on the Colombo markets at 95 Rupee cents, as compared with 1.21 Rupees for 95.42 per cent of standard in 1926.

Unused Coupons

The main reason for the accumulation of unused coupons, which incidentally have now been greatly reduced, was the original decision to assess young rubber from four years old. In Ceylon rubber is seldom tapped before the sixth year, though this is the practice in Malaya. However, the latter country has cut the assessments for the fourth and fifth years and it is probable that Ceylon will follow suit.

Recent regulations with regard to the sale of surplus rubber are expected to check the illicit trade in coupons, and in addition the practice of importing inferior grades from India and reexporting these in the form of top grade sheet and crepe, duty free has now been stopped by the ruling that all such rubber must be classified on arrival and that export permits will cover only such grades.

Acreages and Standard Production

According to available data the acreage under rubber in Ceylon at present is divided as follows: Estates over 10 acres, 432,514; small holdings of under 10 acres, 65,000, approximately. At present there seems to be no means of ascertaining the exact percentage of the rubber in bearing.

Standard production for the sixth year was again increased from 63,839 tons in the fifth restriction year to 76,300 tons for the current restriction year. Total exports of rubber from Ceylon (Ceylon grown), came to 58,800 tons in 1926 while in 1927 they were 55,356, a decrease of 3,444 tons.

Netherlands East Indies

Planting Data

The question as to what number of trees should be planted and retained per acre in order to get the best returns in output with the lowest tapping costs is one that has been studied for many years and the answer has had to be revised more than once. In an endeavor to solve the problem planters have gone from one extreme to the other, from too close planting in the early days of the industry to the later tendency to carry on the thinning out process to exaggerated lengths. There seems to be a movement in the Dutch East Indies to plant and retain more trees per acre than has become the custom on the average European estate in the East, and from time to time the advantages of this system have been discussed in local planting papers.

Recently, C. E. van der Zyl lectured on the relation of outputs to age and planting distances. In his capacity of agricultural adviser to a company owning ten plantations, Mr. van der Zyl had ample opportunity to collect statistical data from which he deduces interesting conclusions. The areas under consideration were planted up at different periods, the oldest dating from 1900. The most important plantings, however, took place in 1910-1911; 1919-1920; and 1920-1921. In these last three periods 4,500, 2,900, and 1,800 bouws respectively were added.

For purposes of comparison the gardens were first divided according to age and then ranked according to the number of trees planted or in tapping per bouw. The number of trees per bouw (about 1.74 acres), differed widely for the various plots, but ranged chiefly between 166 and 250 trees per bouw. Calculations had to be based on the dry rubber output for the different areas, as it was found that as the number of trees exceeded a certain limit, there was still a tendency for the latex output to increase, but that the yield in dry rubber diminished. The trees had selectively been thinned out. Analysis of data obtained for the gardens showed that in all cases there was first a marked increase in the output per bouw as the number of trees increased, but after a certain limit had been reached there was a decline.

Thus in the case of the 1919-1921 trees, the highest latex crops were obtained from gardens where there were 191 to 200 trees per bouw, but the greatest amount of dry rubber was obtained when there were 171 to 190 trees per bouw. On the other hand, the output of dry rubber per tree per tapping increased with the number of trees per unit until the limit of 151 to 170 trees was reached, when a decline in yield set in.

Similar regular increases were also noted for the 1910-1911 trees, but the limit here was found to be reached when there were 130 to 150 trees per bouw, that is as far as yield per tree per tapping was concerned; the total yields still continued to increase.

In gardens where the number of trees per bouw was only 91 to 110 per bouw, the yields from the individual trees were superior to those obtained from the individual trees in the more closely planted areas, but the higher individual output could not make up for the loss on the total area as compared with the closely planted gardens.

Number of Trees Per Bouw

The above data clearly indicates that there is an optimum number of trees which it is advisable to retain per bouw. This optimum Mr. van der Zyl states has to be discovered separately for each plantation. From a large number of observations, he found that if a certain number of trees proved to be the optimum for a given area, and if this number is reduced by the removal of twenty trees, the total latex output decreased by 9 per cent, while the dry rubber output dropped 8 per cent. On the other hand, if there were 20 trees in excess of the optimum number, there was an increase in the total latex output amounting to 3 per cent, but a decline of 2 per cent in the dry rubber yield. So that it seems to be less harmful to retain a few trees in excess of the optimum number, than fewer.

As for the tapping costs, so far, it seems that these are lowest in the neighborhood of the optimum number of trees. But this question needs further study before definite conclusions can be drawn.

Dr. Tengwall of the Rubber Experiment Station was much interested in the lecture and stated that the station plans next year to collect detailed figures from the rubber estates in order to be able to study the matter more closely, and he therefore asked estate managers to give him the necessary statistical data.

Netherlands E. I. Notes

The Ned. Ind. Rubber en Koffie-Cultuur-Mij. sold the estates Tjimenteng and Roegoe to an English concern on January 1, 1928, according to press reports.

Dr. Ch. J. Bernard, head of the General Experiment Station for Tea, has been appointed Director of the Department of Agriculture in place of Dr. Rutgers, who has left the East to take up his new post of Governor of Surinam.

CRUDE RUBBER EXPORTED FROM THE AMAZON Valley in March, 1928, amounted to 2,750 long tons: 1,751 to the United States (of which 102 were washed rubber), 896 to Europe, and 103 tons to Southern Brazil. Stocks at the end of March were as follows: Para, 1,083 tons in first hands, 732 in second; Manaos, 1,073 tons in first hands, 453 in second hands.

Restriction from a French Viewpoint

Les Cahiers Coloniaux, the official organ of the Marseille Chamber of Commerce, has this to say about restriction:

"When the Stevenson scheme was inaugurated, we raised serious doubts of its real significance, and we have always believed that restriction probably played a very much weaker part in the market than was generally thought. When the price of rubber had become so low that it seemed to have little chance of recovery, a rapid increase was on the contrary the natural thing to expect. This came about as a matter of fact, but we expressed at that time doubts on the soundness of the self-satisfied reasoning which foresaw a continued uninterrupted price rise merely because forecasts indicated a probable deficit in production as compared to consumption. In fact, as soon as crude rubber became scarce, and was not available for consumption, demand had to be satisfied elsewhere, and once more the scientific principle was proved that it is not well for a specific commodity to have its price increased abnormally.

"The principal relief for rubber producers then is not to see how high selling prices they can get, as the English have done, but to aim for the lowest production costs, as Dutch producers have done so wisely."

Brazilian Washed Rubber

A consular report from Para states that there are three factories there whose combined output of washed rubber in 1927 came to 1,297 tons, which shows a considerable increase over the figure for 1926—namely: 638 long tons. In both years practically the whole output went to the United States.

One operator, besides producing 184 long tons of washed crepe for export, processed 60 long tons for use in his own shoe factory. In 1926, the factory had been equipped with machinery for making thin sole crepe and for manufacturing rubber-soled canvas shoes. In 1927, this manufacturer produced 262,954 pairs of shoes, using 60 tons of crepe. In 1926 the output had been 96,225 pairs of shoes for which 20 tons of crepe had been used. In 1928, it is hoped to produce 600,000 pairs of rubber soled canvas shoes from 150 tons of crepe.

According to invoices of crepe destined for the United States, prices have been 25 to 30 per cent higher for washed crepe than for unwashed fine Para at the time of shipment. Since all the Para factories have made plans to increase the production of crepe during the current year, it is estimated that total output will be well above 3,000 long tons for the year.

FRENCH MOROCCO SHOWS GREAT STRIDES in imports of American automobile casings.

Rubber Patents, Trade Marks and Designs

Machinery Patents

United States

1,662,428. MACHINE FOR MAKING MANDRELS. This shapes straight seamless metal tubes into flat spiral form by drawing the mandrel through a suitable die resting upon a table using power applied by a worm geared with a heavy disk around which the straight tube is bent.—Clyde E. Lowe, East Cleveland, O.

1,662,596. CUTTING MACHINE. A combination of conveyer and cutting machine whereby continuous single or plied-up stocks of rubber composition can be cut into predetermined lengths without stopping the conveyer. It is particularly adapted for cutting tread stocks for tires with or without breaker strip but is suited to many other lines of manufacture.—A. O. Abbott, Jr., assignor to Morgan and Wright, both of Detroit, Mich.

1,663,232. STRIP-COATING APPARATUS. Liquid rubber cement can be applied to a continuous strip of sheeted rubber compound or rubberized fabric by passing the strip through a small two-roll calender the lower roll of which dips into a cement tank. The cement coating is dried by passage over a drying rack. —R. R. Ambler, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,979. VULCANIZING APPARATUS. Hollow articles, such as tires, are cured under internal pressure by the use of fluid-coupling members for the molds applied either before or after their assembly in the vulcanizer.—J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,664,163. TIRE FINISHING MACHINE. This permits the performance quickly and with accuracy of the operations known as tire finishing such as application of the rubber side walls, chafer strips, etc.—H. A. Denmire, assignor to The Gereral Rubber Co., both of Akron, O.

1,664,196. BEAD COVERING MACHINE. This is particularly directed to wrapping clincher tire beads with a covering of fabric adapted to project beyond the filler and form a so-called suspension which may lie between the carcass plies of the built-up tire casing. — C. H. Desautels, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,664,604. HEEL TRIMMERS. This is adapted for trimming away the stock overflow on molded heels particularly from the flexible lip formed on and projecting from the heel breast as an extension of the attaching surface.—S. J. Finn, Beverly, Mass., assignor to United Shoe Machinery Co., Paterson, N. J.

1,665,193. TREAD REMOVING MACHINE. The debeaded tire carcass from which the bead is to be removed, is placed over a short section of an annular support. An end of the tread is passed into a pair of corrugated gripping rollers and its removal effected by motor driven gearing. — H. D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,665,194. BAND BUILDING MACHINE. Bands from strips of rubberized fabric or cords used for building tire casing are built by splicing its parts in endless form on a work table. It then passes through a set of compression rollers and back to the work table over small rollers.—H. D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,665,870. SHAPING MACHINE. This device centers, expands and shapes a tire band into tire form by stretching the middle portion of the tire and causing the beads to approach each other. Thus the flat band is made ready to receive the inflating airbag ready for mold curing. — L. Wetmore, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,662,251. FINISHING TOOL. F. A. Marsh, Lynn, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,662,365. TREATING MOLDS. J. D. Comstock, Chester, W. Va.

1,662,381. TIRE DETECTOR. T. M. Eynon, assignor to M. Y. Eynon, both of Philadelphia, Pa.

1,662,804. VULCANIZER. C. Dressler, assignor to American Dressler Tunnel Kilns, Inc., both of New York, N. Y.

1,663,458 and 1,663,459. LASTING MACHINE. F. J. MacDonald, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,460. FOOTWEAR MACHINE. F. J. MacDonald, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,461. SHEET MANIPULATING DEVICE. F. J. MacDonald, Ellet, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,633,462. SHOE LINING APPARATUS. F. J. MacDonald, Ellet, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,697. BEAD RING REMOVER. F. Goodall, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,663,732. DIE HEAD. I. J. Remark, assignor to The General Tire & Rubber Co., both of Akron, O.

1,663,754. INNER TUBE MACHINE. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

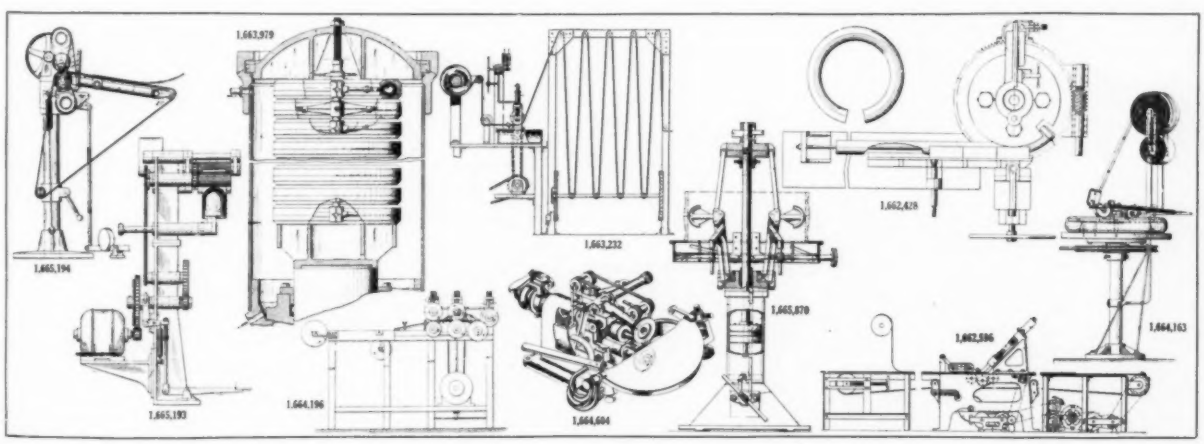
1,663,756. TUBE MAKING MACHINE.—J. O. Goodwin, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,664,273. CALENDER GUIDE. H. J. Theroux, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,664,621. TIRE DEFLATOR. J. L. Goff, assignor of one half to J. A. Goff, both of Topeka, Kans.

1,664,999. TESTING MACHINE RECORDER. W. J. Tretch, Philadelphia, Pa., and F. Buckingham, Franklinville, N. J., assignors to Riehle Bros. Testing Machine Co., Philadelphia, Pa.

1,665,310, 1,665,311 and 1,665,312. VULCANIZER. L. A. Laursen, Eau Claire, Wis., assignor of one fourth to P. F. Laursen, Akron, O.



Rubber Patents, Trade Marks and Designs

1,665,440. Tire Vulcanizer. W. A. Brubaker, Akron, O.

1,665,585. Apparatus For Laminated Articles. M. W. Esch, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,665,831. Tire Building Machine. D. L. Williams, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,665,848. Precision Adjustment Device. J. R. Gammeter and C. C. Cadden, Akron, O., assignors to The B. F. Goodrich Co., New York, N. Y.

1,665,853. Apparatus For Making Grommets. C. W. Leguillon, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,665,864. Disengaging Device. E. G. Templeton, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,665,889. Chaffing Strip Applier. E. F. Maas, assignor to the Goodyear Tire & Rubber Co., both of Akron, O.

1,666,038. Tire Bead Device.. S. W. Alderfer, Akron, O.

Dominion of Canada

278,745 Battery Box Mold. The Goliath Rubber Co., assignee of C. L. Fisher, both of Cleveland, O., U. S. A.

278,746 Tire Casing. The B. F. Goodrich Co., New York, N. Y., assignee of J. R. Gammeter, Akron, O., both in the U. S. A.

278,747 Tire. The B. F. Goodrich Co., New York, N. Y., assignee of J. R. Gammeter, Akron, O., both in the U. S. A.

278,854 Tire Working Tool. M. Henderson, Genthon, Manitoba.

279,134 Tire Stitching Device. The Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of F. T. Cardarelli and A. La Barre, Akron, O., U. S. A.

279,135 Tire Building Machine. The Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of W. C. Stevens, Akron, O., U. S. A.

279,142 Tire Machine. The Goodyear Tire and Rubber Co., assignee of J. I. Haase, both of Akron, O., U. S. A.

279,147 Rubber Article Mold. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron O., U. S. A.

279,161 Tire Bead Machine. The National Standard Co., Niles, Mich., assignee of S. W. Alderfer, Akron, O., both in the U. S. A.

279,174 and 279,175 Tire Casing Spreader. The Weaver Mfg. Co., assignee of G. E. Weaver and E. W. Kelley, all of Springfield, Ill., U. S. A.

279,176 Tire Spreader. The Weaver Mfg. Co., assignee of G. E. Weaver, both of Springfield, Ill., U. S. A.

United Kingdom

283,705 Tire Vulcanizing Mold. O. Shaw and F. Shaw & Co., Ltd., Corbett St., Ironworks, Bradford, Manchester.

283,960† Hollow Rubber Article Mold. J. E. Ryan, 32 Rue de la Boetie, Paris, France.

284,021 Tire. India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106 Cannon St., and W. L. Avery, India Rubber Gutta Percha & Telegraph Works, Silvertown, both in London.

284,461 Tire. J. C. Woodford, 505 Third Ave., Oskaloosa, Ia., U. S. A.

284,530 Knitting Machine. T. Vorck and P. Zimmermann, 50 Nordstrasse, Barmen, Germany.

284,679† Tire Pressure Gage. H. L. McPherson, 1535 Hardin St., and J. H. Weatherford, 1107 South Cooper St., both in Memphis, Tenn., U. S. A.

†Not yet accepted.

Germany

457,075 Machine for Producing Goods with Rubber Chain Treads., Vorck & Zimmermann G. m. b. H., Barmen.

457,484 Printing Blankets. U. S. Import House Emanuel van Dam, Amsterdam, Holland. Represented by, S. Reutzenbaum, Berlin S. W. 11.

457,775 Latex Tool. Emil Unterwagner, Kaiserpassage 31, Karlsruhe.

Designs

Germany

1,021,445 Heel Press. Jakob Orth Machinenfabrik, Pirmasens.

1,022,452 Machine for Producing Unfinished Football Bladders. Nienburger Maschinenfabrik A. G., Nienburg a. d. S.

1,022,539 Mixing Machine Roll. Continental-Caoutchouc-Und Gutta-Percha-Compagnie, Hannover.

Process

United States

1,663,275 Grained Rubber Article. T. J. Mell, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,456 and 1,663,457 Footwear. F. J. MacDonald, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,587 Rubber Article. E. W. Dunbar, Hudson, assignor to Cambridge Rubber Co., Cambridge, both in Mass.

1,663,954 Buffing Leather Substitute. R. B. Respess, New York, N. Y., assignor by mesne assignments, to Respro Inc., Cranston, R. I.

1,664,259 Tire Casing. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,664,981 Cleaning Chicle. D. W. Howe, E. R. Pickett, and D. M. McBean, assignors to Beech Nut Packing Co., all of Canajoharie, N. Y.

1,665,152 Brush. R. M. Withycombe, Sydney, New South Wales, Australia.

1,665,308 Vulcanizing Tubes. L. A. Laursen, Eau Claire, Wis., assignor of one fourth to P. F. Laursen, Akron, O.

1,665,309 Vulcanizing Articles. L. A. Laursen, Eau Claire, Wis., assignor of one fourth to P. F. Laursen, Akron, O.

Dominion of Canada

278,737 Rubber Article. The Dunlop Rubber Co., Ltd., London, N. W. 1, assignee of D. F. Twiss, Birmingham, County of Warwick, both in England.

278,941 Vulcanization Accelerator. E. I. du Pont de Nemours & Co., Wilmington, Del., assignee of W. Scott, Akron, O., both in the U. S. A.

279,180 Tire Casing. J. Howard, assignor, Montreal, Que., S. Greenberg, assignee of half of the interest, W. Goodman and M. S. Wolson, assignee of one-quarter of the interest, all in New York, N. Y., U. S. A.

United Kingdom

284,680† Corrugated Bag. H. L. McPherson, 1535 Hardin St., and J. H. Weatherford, 1107 South Cooper St., both in Memphis, Tenn., U. S. A.

284,785 Tire. R. Gollert, 5 Waitzstrasse, Charlottenburg, Germany.

†Not yet accepted.

Germany

457,566 Producing Marbleized Goods. Gummiwaren. Fabrik M. Steinberg, Köln-Lindenthal.

457,745 Attaching Hard or Soft Rubber to other Objects. Dr. Hermann Beckmann, Albertinenstrasse 26, Berlin-Zeulendorf.

Chemical Patents

United States

1,662,182. Anti-Oxidant And Accelerator. Process for retarding the deterioration of rubber by combining with it an excess of a condensation product having the dual properties of an accelerator and a retarder of deterioration.—S. M. Cadwell, Leonia, N. J., assignor to The Naugatuck Chemical Co., Naugatuck, Conn.

1,662,430. Galvanoplasty. This comprises the application over a stiffening material upon the object, a base containing phosphorus, rubber, asphaltum, carbon bisulphide and binding materials. This base reacts with a subsequent coating of silver nitrate rendering the surface conductive for electroplating.—F. Maas, assignor by mesne assignments, to Natural Flower Metalizing Co., Inc., both of New York, N. Y.

1,663,101. Coating Composition. A solution of rubber in a volatile solvent, drying oil and an amount of metallic drier. —C. M. A. Stine and C. Coolidge, assignors to E. I. duPont de Nemours & Co., all of Wilmington, Del.

1,663,119. Coating Composition. A solution of rubber, a pigment which ordinarily gives rise to lobbering in a rubber solution, a drying oil and a delobbering agent comprising from .05 to 10 per cent of oleic acid.—C. Coolidge, Wilmington, Del., and H. E. Eastlack, Parlin, N. J., assignors to E. I. duPont de Nemours & Co., Wilmington, Del.

Rubber Patents, Trade Marks and Designs

1,663,436. Colored Vulcanized Rubber. The process of coloring rubber by mixing it with a vulcanizing agent and with the sodium salt of a specified azo compound.—E. R. Bridgwater, assignor to E. I. duPont de Nemours & Co., both of Wilmington, Del.

1,664,481. Accelerator. A compound formed by the reaction of hydrogen sulphide upon the ammonia addition product of a straight chain aldehyde.—C. O. North, Talmadge Township, and W. Scott, Akron, assignors to The Rubber Service Laboratories Co., Akron, both in O.

1,664,767. Zinc Oxide. A method of improving zinc oxide for rubber compounding use by reducing the acidity of the oxide by the action of steam.—F. G. Breyer, E. H. Bunce, and J. H. Weikel, all of Palmerton, N. J., assignors to The New Jersey Zinc Co., New York, N. Y.

1,664,866. Coated Fabric. A plied coated fabric comprising a rubber coated base fabric upon the rubberized side of which is laid a second fabric finished on its outer surface with a coating of pyroxylin solution.—W. O. Stoddard, Jr., Detroit, Mich., assignor to Duratex Corp., Elizabeth, N. J.

1,665,355. Molding Rubber. The method of interposing between the mold and the mass to be molded of a ready-made foil of cellulose derivatives.—A. T. Gustafson, Gottenborg, Sweden.

1,665,500. Aircraft Covering. A fabric coated with gelatine having a viscose rubber latex superimposed upon it and treated with a coating of cellulose-rubber to render it flexible.—I. M. Jacobsohn, Chicago, Ill., and S. Truscott, Birmingham, O.

Dominion of Canada

278,709. Rubber Dispersion Compounding. A method of incorporating ingredients with rubber dispersions which comprises dispersing a mixture of rubber and other ingredients in a non-solvent and combining the dispersion with aqueous suspensions of rubber. — The Canadian Consolidated Rubber Co., Ltd., Montreal, assignee of W. A. Gibbons, Little Neck, N. Y., U. S. A.

278,941. Accelerator. The product resulting from treating with formaldehyde the condensation product of aniline and a straight chain aldehyde containing a plurity of carbon atoms.—E. I. duPont de Nemours & Co., Wilmington, Del., assignee of W. Scott, Akron, O., both in the U. S. A.

278,942. Accelerator. A compound obtainable by the chemical combination of an aldehyde, a primary amine and carbon disulphide.—E. I. du Pont de Nemours & Co., Wilmington, Del., assignee of D. H. Powers, Penns Grove, N. J., both in the U. S. A.

United Kingdom

283,566†. Porous Rubber. Example mixture, 100 parts caoutchouc, 7½ parts sulphur, ½ part accelerator, 50 parts lithopone, 75 parts chalk, 200 parts sawdust, and 100 parts benzine. Water is added to increase the porosity.—H. Ziegner, 20 Heinitzstrasse, Hagen, Westphalia, Germany.

† Not yet accepted.

283,661. Accelerator. 1-Mercapto-benzothiazole is used as an accelerator. It is prepared by heating under pressure a mixture of ammonia as a gas dissolved in water, carbon bisulphide, anitine and sulphur.—L. B. Sebrell, Cuyahoga Falls, O., U. S. A.

283,679. Accelerator. 1-Mercapto-benzothiazole prepared by heating to about 280° C. in an autoclave, aniline, sulphur and carbon bisulphide. The product is dissolved in sodium hydroxide and precipitated with hydrochloric acid.—W. J. Kelly, Akron, O., U. S. A.

283,840 and 283,841† Synthetic Rubber. —I. G. Farben-industrie, A. G. Frankfort-on-Main, Germany.

283,871†. Latex Treating. In an example, overmilled rubber is worked with two per cent of glue and ammonia containing water until a paste is obtained. Water is added until an emulsion containing 50 per cent of water is formed and this is then added to an equal amount of natural latex.—Anode Rubber Co., Ltd., 15 Throgmorton Ave., London.

283,984. Latex Treating. Latex or like aqueous rubber dispersions with or without compounding vulcanizing anti-coagulating, coloring, etc., is sprayed in a damp unheated state upon the unheated surface of a mold or former. The process may also be used for ornamenting or varying the thickness of already formed articles.—Dunlop Rubber Co., Ltd., 32 Osnaburg St., London, and D. F. Twiss, Fort Dunlop, Erdington, Birmingham.

284,244†. Rubber Emulsions. Substitutes for natural latex are prepared by passing a thick rubber solution, together with water containing an emulsifying agent, through a high speed emulsifying machine and removing the rubber solvent from the emulsified product by low temperature distillation.—J. M. A. Touchon, 95 Rue de Monceau, Paris, France.

284,608†. Treating Latex. Latex is treated at a low temperature by adding small quantities of substances such as solutions or suspensions of sales of di- or trivalent metals and is subsequently, heated, whereupon coagulation or thickening of the latex occurs.—Soc. Italiana Pirelli and U. Pestalozzo both of Milan, Italy.

284,736. Latex Treating. In the electrodeposition of rubber, etc., from dispersions, the toughness of the deposit is increased by the incorporation with natural aqueous dispersion of peptizing agents such as protective colloids, for example, soft soap.—Dunlop Rubber Co., Ltd., 32, Osnaburg St., London, D. F. Twiss and Hungarian Rubber Goods Factory, Budapest, and A. Healey, Fort Dunlop, Erdington, Birmingham.

284,829. Waste Rubber. Heat and pressure is applied to finely ground waste rubber to which has been added an antiager.—Dunlop Rubber Co., Ltd., 32 Osnaburg St., London, D. F. Twiss and F. Thomas, Fort Dunlop, Erdington, Birmingham.

284,912. Rubber Composition. A buoyant rubber for oil hose consists of up to three per cent of factice, five per cent sulphur, three per cent alkaline soap insoluble in mineral oils and melting at vulcanizing temperature, one per cent diphenyl-guanidine and the remaining 80 per cent or more rubber.—E. Yoshioka, 1469, Shimo-Ochiai, Ochiai-Machi, Toyotama-Gori, Tokyo, Japan.

284,938. Spongy Rubber.—R. J. Noar, 34 Park Rd., Pendleton, Lancashire.

† Not yet accepted.

Germany

457,287 Accelerating Vulcanization. I. C. Farbenindustrie A. G,. Frankfurt a. Main.

457,698 Producing Plastic Masses from Rubber, Gutta-Percha, and Balata. Electrical Research Products, Inc., New York, N. Y., U. S. A. Represented by, B. Kugelmann, Berlin, S. W. 11.

458,039 Producing Packing Rings. Demag A. G. Duisburg.

General

United States

March 13, 1928*

1,662,051 Hose Nipple. H. G. Bruner, Wakefield, assignor to Boston Woven Hose & Rubber Co., Cambridge, both in Mass.

1,662,309 Bumper. A. G. Geistert, Detroit, Mich., and J. M. Schoonmaker, Jr., Sewickley, Pa., assignors to General Motors Corp., Detroit, Mich.

1,662,527 Ball. W. W. MacDonald, Chicopee, Mass.

1,662,599 Tire. L. A. Brown, Alto, assignor to Corduroy Tire Co., Grand Rapids, both in Mich.

1,662,682 Syringe. J. U. Lloyd, Cincinnati, O.

1,662,756 Shoe Outsole. B. Montante, San Luis Potosi, Mexico.

March 20, 1928*

1,662,818 Dishwashing Machine. F. G. Brotz, assignor to Kohler Co., both of Kohler, Wis.

1,662,968 Tire Alarm. L. Garrett, Borger, Tex.

1,663,268 Life Preserver. J. R. Foley, Kelso, and M. Hart, Vancouver, Wash.

1,663,298 Filter Sheet. W. C. Geer, Akron, O., and C. F. Sherwood, San Francisco, Calif., assignors to The B. F. Goodrich Co., New York, N. Y.

1,663,511 Tire. H. C. Anderson, New York, N. Y.

March 27, 1928*

1,663,622 Crutch Tip. F. C. Atkinson, Western Port, Md.

1,663,641 Exerciser. G. S. Smallwood, Freeport, N. Y.

1,663,694 Handle Grip. E. Fetter, Baltimore, Md.

1,663,755 Door Structure for Pressure Tank. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,663,878 Cable. L. Emanueli, assignor to Societa Italiana Pirelli, both of Milan, Italy.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Rubber Patents, Trade Marks and Designs

1,664,060 Armored Hose. A. E. Caldwell, assignor to Continental Rubber Works, both of Erie, Pa.

1,664,115 Overshoe. C. Kenyon, Jr., New York, N. Y.

1,664,336 Ball. I. I. Tubbs, Superior, assignor of one-half to G. F. Miller, Menominie, both in Wis.

1,664,352 Tire. E. W. Coleman, Southall, England.

April 3, 1928*

1,664,397 Golf Ball. S. J. Bens, New York, N. Y.

1,664,521 Sink Strainer Cushion. A. D. Mayette, Cleveland, O.

1,664,542 Glove Protector. J. B. Douglass, Harvey, Ia.

1,664,636 Cooling Device. A. Mayers, St. Augustine, Fla.

1,664,674 Tire. E. Frederick, New Orleans, assignor of one-half to L. J. Le Blanc, Jefferson Parish, both in La.

1,664,970 Tire Inflator. W. G. Cumming, Montreal, Que., Canada.

1,665,070 Tire Bead. R. C. Pierce, Belleville, N. J., assignor by mesne assignments to American Chain Co., Inc., New York, N. Y.

1,665,094 Tire Boot. C. Henry, Flint, Mich.

April 10, 1928*

1,665,246 Electrical Connection. H. L. Young, assignor to J. R. Gammeter, both of Akron, O.

1,665,840 Tire. D. N. Booth, New York, N. Y.

1,665,969 Punching Bag. D. McNamara, New York, N. Y.

1,666,002 Tire Boot. M. P. Cole, Goodland, Kans.

1,666,009 Tire Boot. M. O. Haney, Iola, Kans.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Dominion of Canada

March 13, 1928

278,455 Tire Patch. R. D. Boyce, London, N. W. 4, England.

278,552 Garter. The Currie Mfg. Co., Ltd., assignee of W. N. Winnett, both of Toronto, Ont.

278,612 Tire. L. Lambert and A. Bellefeuille, assignee of one half of the interest both of Biddleford, Me., U. S. A.

March 20, 1928

278,661 Heel. P. H. Letchford, Winnipeg, Manitoba.

278,782 Heel. The Rubber Latex Research Corp., Boston, assignee of W. B. Westcott, Dover, both in Mass., U. S. A.

March 27, 1928

278,827 Tire. J. E. Bove, Keany, N. J., U. S. A.

278,870 Tire Inflator. G. S. Loy, Paris, France.

278,874 Tire. A. J. Michaud, Montreal, Que.

278,906 Bottle Protector. A. C. Widdis, Stratford, Ont.

278,908 Tire Patch. M. J. Wilcox, Portland, Oreg., U. S. A.

April 3, 1928

279,002 Tooth Cleaning Device. J. J. Hartnett and C. D. Waighorn, co-inventors, both of Hamilton, Ont.

279,025 Sheet Material. C. R. Collyer, Shepperton, County of Middlesex, England.

279,043 Cord Terminal. W. A. Frantz, Cleveland Heights, O., U. S. A.

279,049 Roller. C. H. Gray, London, E. C. 4, England.

279,095 Bottle Gasket. S. J. Stanley, New York, N. Y., U. S. A.

279,141 Tire. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, O., U. S. A.

United Kingdom

March 7, 1928

283,459 Shoe. R. Richard, Izeaux, Isère, France.

283,496† Douche. C. Thelliez, Seine, France.

283,535† Drop Center Rim. Continental Caoutchouc und Gutta Percha Cie, 100 Vahrenwalderstrasse, Hanover, Germany.

283,574† Tire. Morgan & Wright, Belleview Ave., assignees of C. J. Dolding, 2198 Garland Ave., both in Detroit, Mich., U. S. A.

283,660 Rim. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, and E. F. Goodyear of Dunlop Rubber Co., Foleshill, Coventry.

283,685 Molding Clay Articles. J. F. Duke, 23 St. Michael's Rd., Stockwell, London.

283,784 Bidet. B. Claus, 60 Walter Rathenaustrasse, Magdeburg, Germany.

March 14, 1928

284,095 Tube Patch. R. Surridge, 73 Church St., Camberwell, London.

284,119 Tire Inflator. B. C. Jensen, 47 Frederiksberg Alle, Frederiksberg, Denmark, and J. P. Petersen, 37A Heimdalsgade, Copenhagen.

March 21, 1928

284,165 Pipe Cleaner. G. A. Van Nie, 101 Ie Constantijn Huygensstraat, Amsterdam.

284,166 Door Check. F. K. Eastman, 1601 North Washington St., Kokomo, Ind., U. S. A.

284,171 Arch Support. W. C. Alderton, 1 Clifton Gardens, Golder's Green, Middlesex.

284,236† Teat Cup. W. Capil, Invercargill, New Zealand.

284,305 Rim. Goodyear Tire & Rubber Co., 1144 Market St., Akron, assignees of F. R. Klaus, 2504 East Market St., Warren, and E. F. Brunner, 960 Lakewood Ave., Akron, both in O., U. S. A.

284,388 Elastic Band. E. Hassel-Kuss, 4 Bachstrasse, Barmen, Germany.

284,396 Seat Spring. P. O'Flynn, 3 Stanford Terrace, Pirbright, Surrey.

284,397 Tire. W. E. Swern, 901 Park Ave., Kokomo, Ind., U. S. A.

284,412 Bottle. H. C. Stephens, Ltd., C. G. Stephens, and F. C. Fincham, 1 Frederick's Place, Old Jewry, London.

284,438 Shuttle Threader. H. A. Murphy, 14 Grange Rd., Southport, Lancashire.

284,478 Garment Supporting Band. G. M. Harsh, Curtain Ave., Baltimore, Md., U. S. A.

March 28, 1928

284,537 Knitted Fabric. T. Vorck and P. Zimmermann, 50 Nordstrasse, Barmen, Germany.

284,562 Shoe Sole. Soc. Anon. Etablissements Hutchinson, 124 Avenue des Champs Elysees, Paris, France.

284,572 Shoe. C. Hausig, 27 Verlangerte Wilhelmstrasse, Lichterfelde, Berlin, Germany.

284,597† Vibration Indicator. H. V. E. Vatinet, 8 Allee des Roses, and C. Durand, Rue de la Croix, both in Orly, Seine, France.

284,669† Insulator. K. A. Hawley, South Charles St., Baltimore Md., U. S. A.

284,733† Cable. Western Electric Co., Inc., 195 Broadway, New York, assignees of J. J. Gilbert, 8 Covert St., Port Washington, both in N. Y., U. S. A.

284,770 Electric Resistance. J. L. Baird and Television Ltd., Motograph House, Upper St. Martin's Lane, London.

284,880 Tire. R. Dexpert, Gironde, France.

284,893 Overshoe. C. W. Randall, 141 Shoreditch High St., London.

284,927 Tire. S. E. Eveson, 3 William St., Brierley Hill, Staffordshire.

284,932 Brush. H. Zimmet, 1 Grosse Alle, Hamburg, Germany.

†Not yet accepted.

Germany

457,530 Vehicle Wheel. Allgemeine Elektricitätsgesellschaft, Friedrich-Karl Ufer 2-4, Berlin, N. W. 40.

Designs

Germany

1,021,330 Shaving Brush. Curt Hofmann, Jungststrasse 27, Dresden-Blasewitz.

1,021,480 Caterpillar Band. Maschinenfabrik Eszlingen, Eszlingen, Wurtt.

1,022,228 Sponge Rubber Mat. Hannoversche Gummiwerke Excelsior, A. G. Hannover-Limmer.

1,022,232 Quoit. Kasper Berg, Laufamholzstrasse 70, Nurnberg.

1,022,386 Hose With Insert. Pahlsche Gummi-und Asbest Gesellschaft m. b. H., Düsseldorf-Rath.

1,022,470 Lead Cable. Siemens-Schuckert Werke A. G., Berlin-Siemensstadt.

Rubber Patents, Trade Marks and Designs

1,022,519 SPOOL. Felten & Guilleaume Carlswerke A. G., Koln-Mülheim.

1,022,903 STOCKING. Peter Voszkühler, Waisenstrasse 20, Barmen.

1,022,929 COVER FOR PENCILS, FOUNTAIN PENS, etc. Peter Kreutz, Pachten b. Dillingen, Saar.

1,023,070 BATHING SUIT WITH INFLATABLE CUSHION. Herbert Heine, Rathhausstrasse 1a., Leipzig C. 1.

1,023,516 AIR MATTRESS. Matthies & Killian Vertriebsgesellschaft für Industrie-erzeugnisse, Devrientstrasse 7, Hannover.

1,023,561 BED SHEET. Firma Ing. Hans Liewig, Dahlemerstrasse 29, Berlin-Lichterfelde.

1,023,617 ATOMIZER BALL. Firma Lick-Paramount, Berlin S. W. 68.

1,023,960 PROTECTIVE PLAQUE WITH DESIGNS. Flügel & Polter, Jahnstrasse 81-83, Leipzig, W. 31.

1,024,093 INFLATABLE, HOLLOW BODY. Gummiwaren-fabrik bei Melle Wortmann & C. Bösch, Melle i. Hann.

1,024,310 SPONGE RUBBER SHAVING BRUSH. Edmund Schmidt, Christstrasse 22, Berlin-Charlottenburg, 5.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

March 13, 1928

Act of February 20, 1905

239,750 Representation of a tire above which are the words: "EUREKA TIRE SPREADER"—tire spreader. Shapiro Mfg. Co., Philadelphia, Pa.

239,841 PARAPURA—crude rubber and rubber crepe. C. E. Wood, Inc., New York, N. Y.

239,924 BANDOLAIR—combination brassière and dress shield. I. B. Kleinert Rubber Co., New York, N. Y.

Act of March 19, 1920

239,993 PLI-TRED (FLEXIBILITY)—shoes made of leather, rubber fabric, etc. Dr. A. Posner Shoes, Inc., New York, N. Y.

March 20, 1928

Act of February 20, 1905

240,025 ACE-ITE—jars, cells, covers, vents and separators for storage batteries. American Hard Rubber Co., Hempstead and New York, N. Y.

240,048 Circle containing the representation of a shoemaker working on a shoe and the words: "MCELROY-SLOAN SHOE CO.," "TRADE MARK" and "COMBINED SPECIALTIES"; beneath the circle the words: "THEY CREATE A HABIT"—shoes of leather, fabric, rubber, etc. Craddock-Terry Co., Lynchburg, Va.

240,052 5 IN 1— boot and shoe heels. Cushion Spring Rubber Co., St. Louis, Mo.

240,105 SANASAFE—sanitary napkin shield. I. B. Kleinert Rubber Co., New York, N. Y.

240,204 833—vulcanization accelerators. The Grasselli Chemical Co., Cleveland, O.

240,239 LIGHTSTEP—heels, soles and half soles. Jarman Shoe Co., Nashville, Tenn.

240,246 Representation of a cactus in front of which stands a cowboy across the front of whose hat are the words: "KAKTUS KID"— tire patches and boots. C. J. Evans, doing business as Cactus Mfg. Co., Los Angeles, Calif.

March 27, 1928

Act of February 20, 1905

240,431 "IDEAL" THE ACME OF PERFECTION—sanitary belts, aprons, step-ins and skirts. Oskar Eisenkramer, New York, N. Y.

240,434 Twelve small squares each containing the representation of a golfer—golf balls. John Wanamaker New York, New York, N. Y.

240,441 PENIMAID—sanitary aprons, belts and step-ins. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

240,455 Representation of a golf ball, superimposed across the ball two arrows pointing in opposite directions and enclosing the word: "LINDY"—golf balls. H. I. Jordan, Auburn, Me.

240,463 PRO SHOT—golf balls and clubs. J. A. Roseman, Evanston, Ill.

240,494 SPEEDMORE—pneumatic tires, inner tubes, brake linings, fan belts, for automobiles, blowout patches and laced boots for pneumatic tires. Belknap Hardware & Mfg. Co., Louisville, Ky.

240,504 NEE-TEE—garters. C. A. Smith, doing business as Nee Tee Garter Co., New York, N. Y.

Act of March 19, 1920

240,531 STEAM-WELDED—inner tubes for pneumatic tires. The Firestone Tire & Rubber Co., Akron, O.

240,564 DUO-TREAD — pneumatic tires. Lambert Tire & Rubber Co., Barberton, O.

April 3, 1928

Act of February 20, 1905

240,583 XETAL—rubber, latex and gutta percha. Safety Glass & Xetal Products, Ltd., Stapleford, England.

240,615 Representation of a cotton plant across the front of which is superimposed the word: "DIXIE"—patch for tires and other rubber surfaces. Dixie Mfg. Co., Inc., Jackson, Miss.

240,628 Oval containing the words: "THE SWISH"—boots, shoes and slippers of leather, rubber, etc. The Munroe Shoe Co., Inc., Auburn, Me.

240,633 Double circle containing the words: "TAUKO" and "TOUGHER THAN ELEPHANT'S HIDE"—heels, taps and soles. Taunton Rubber Co., Taunton, Mass.

240,639 Representation of an indian's head—crude rubber and rubber crepe. C. E. Wood, Inc., New York, N. Y.

240,652 VULTEX—certain named latex. Warren MacPherson, Cambridge, Mass.

240,678 Outline representation of a shoe box opened out flat and the words: "I MILLER" and "BEAUTIFUL SHOES"—overshoes, etc. I. Miller & Sons, Inc., Long Island City, N. Y.

240,679 Outline representing the lid of a shoe box opened out flat and the words: "I. MILLER" and "BEAUTIFUL SHOES"—shoes, slippers, etc. of leather, fabric, rubber and cloth. I. Miller & Sons, Inc., Long Island City, N. Y.

240,692 DUROWEAR—caps, hats, bathing caps, aprons and baby pants. Jacob Stein, doing business as Climax Rubber Co., New York and Brooklyn, N. Y.

240,710 LYTE-MAC — raincoats. C. H. Place, New Rochelle, N. Y.

Act of March 19, 1920

240,718 SAVE-A-TIRE — patches, reliners, boots, tire-tube repair kits, etc. The Leo Meyer Co., Akron, O.

April 10, 1928

Act of February 20, 1905

240,957 LEVIATHAN—pneumatic tires, inner tubes and casings. Corduroy Tire Co., Grand Rapids, Mich.

240,977 TEXA—pneumatic inner tubes. A. C. Bering, Jr., doing business as Texa Tire & Rubber Co., Houston, Tex.

Act of March 19, 1920

240,998 THEY WEAR AND WEAR AND WEAR—tires, inner tubes and tire and tube repair material. The Swinehart Tire & Rubber Co., Akron, O.

Dominion of Canada

March 20, 1928

43,431 SNAPPY — footwear. The Miner Rubber Co., Ltd., Granby, Que.

43,432 WHIZZ—footwear. The Miner Rubber Co., Ltd., Granby, Que.

March 27, 1928

43,472 SPOTLIGHT—automobile tires, tubes, accessories, etc. The T. Eaton Co., Ltd., Toronto, Ont., and Winnipeg, Manitoba.

43,473 SPOTLIGHT — druggists' sundries. The T. Eaton Co., Ltd., Toronto, Ont., and Winnipeg, Manitoba.

43,474 BRAVO—rubber bands, erasers, etc. American Lead Pencil Co., Hoboken, N. J., U. S. A.

43,475 ROMAC—tire repair outfits, etc. Romac Motor Accessories, Ltd., Romac Works, The Hyde, Hendon, London, N. W. England.

April 3, 1928

43,497 BALLOON—heels, lifts, soles, half-soles, etc. Balloon Rubber Heel Corp., Boston, Mass., U. S. A.

43,515 EXCEL—footwear. Hood Rubber Co., Watertown, Mass., U. S. A.

Rubber Patents, Trade Marks and Designs

United Kingdom

February 22, 1928

486,921 SPARTAN—rubber, gutta percha and balata machine belting. Spartan Mfg. Co., Ltd., Broad St. House, New Broad St., London, E. C. 2.

487,343 RANGER—rubber and gutta percha goods. The Avon India-Rubber Co., Ltd., Rubber Works, Bath Rd., Meltsham, Wiltshire.

487,446 YEOMAN—rubber and gutta percha goods. The Avon India-Rubber Co., Ltd., Rubber Works, Bath Rd., Meltsham, Wiltshire.

487,448 DEMOCRAT — rubber and gutta percha goods. The Avon India-Rubber Co., Ltd., Rubber Works, Bath Rd., Meltsham, Wiltshire.

March 7, 1928

B482,833 ARC—detachable heels, soles, tips and protectors. S. Bevan & Co., 112-114, Coldharbour Lane, London, S. E. 5.

486,508 HERMETIC—couplings for motor-car machinery. The Self-Sealing Rubber Co., Ltd., Hermetic Works, Ryland St., Birmingham.

March 14, 1928

483,126 SUNRISE—erasers, etc., Anciens Établissements Baignol & Farjon Société Anonyme, 3 Rue Rossini, Paris, France.

486,305 PETROLIC—tubular hose. The Leyland & Birmingham Rubber Co., Ltd., 24-30 Duke St., Aldgate, London, E. C. 3.

487,490 GIRCO—clothing. The Greengate & Irwell Rubber Co., Ltd., Greengate Rubber Works, Greengate, and Irwell Works, Ordsall Lane, both in Salford, Lancashire.

487,491 GIRCOL—clothing. The Greengate & Irwell Rubber Co., Ltd., Greengate Rubber Works, Greengate, and Irwell Works, Ordsall Lane, both in Salford, Lancashire.

487,492 GIRCOL—rubber and gutta percha goods, not including soles and heels or any goods of a like kind. The Greengate & Irwell Rubber Co., Ltd., Greengate Rubber Works, Greengate, Salford, Lancashire.

487,493 IRCOL—clothing. The Greengate & Irwell Rubber Co., Ltd., Greengate Rubber Works, Greengate, and Irwell Works, Ordsall Lane, both in Salford, Lancashire.

487,810 RYSTUM—anti-puncture band for pneumatic tires. W. J. Gregory, "Bankside," South Road, Chorley Wood, Hertfordshire.

488,198 PIRATE — engine packings and jointings. The Beldam Packing & Rubber Co., Ltd., 16, Gracechurch St., London, E. C. 3.

March 21, 1928

479,789 Circle containing fanciful design—rubber and gutta percha goods. Siemens & Halske Aktiengesellschaft, 101-110 Nonnendamm-Allee, Berlin-Siemensstadt, Germany (Haseltine, Lake & Co., 28. Southampton Bldgs., London, W. C 2).

481,551 ASPIRA—douches. Anatole Boudo, trading as J. Roussel, 173, Regent St., London, W. 1.

486,460 AERO—draught excluders. J. P. Pendlebury, 4, Wentworth St., Bolton, Lancashire.

487,787 LOADSTER—rubber and gutta percha goods. The Avon India Rubber Co., Ltd., Rubber Works, Bath Rd., Melksham, Wiltshire.

487,799 MARFIMAC—garments made from light weight rubber backed cotton and artificial silk cloth. Henry Marsden & Co., Ltd., 77, Dantzic St., Manchester, 6.

March 28, 1928

482,261 SOLEX—rubber goods. Société Anonyme Solex, 190 Avenue de Neuilly, Neuilly-sur-Seine, (Seine) France.

485,828 VARSITY—soles and heels. Sussex Rubber Co., Ltd., 32, Houndsditch, London, E. I.

486,744 PIXIE—boots, shoes and slippers. Dominion Rubber Co., Ltd., 47-48, Farringdon St., London, E. C. 4.

487,900 VICTORY—bell pull handles, etc. H. B. Foster & Sons, Ltd., 28, Springfield Rd., Kingston, Surrey.

488,187 PHILIDE—material for soles and heels of boots and shoes. Phillips' Patents, Ltd., 142-146, Old St., London, E. C. I.

Designs

United States

74,760 BULB FOR HYDROMETER SYRINGE. Term 7 years. W. A. Reynolds, assignor to The Ohio Rubber Co., both of Cleveland, O.

Labels

United States

33,708 SANTRO NIPPLE. Nipples. Julius Schmid, Inc., New York, N. Y. Published Jan. 20, 1928.

33,716 SUPER SERVICE. Universal tire flaps. Super Service Corp., Omaha, Nebr. Published Jan. 15, 1927.

33,835 SUPER SERVICE.—Automobile tubes. Super Service Corp., Omaha, Nebr. Published Dec. 15, 1927.

Prints

United States

10,571 STYLE - COMFORT - WEAR GOOD (WINGFOOT) YEAR WINGFOOT HEELS. Heels. The Goodyear Tire & Rubber Co., Inc., Akron, O. Published Nov. 28, 1927.

10,572 ENJOY WALKING-GOOD (WINGFOOT) YEAR WINGFOOT HEELS-STYLE-WEAR. Heels. The Goodyear Tire & Rubber Co., Inc., Akron, O. Published Nov. 28, 1927.

10,696 HOO! HOO! THAT SURELY MUST BE A FIRESTONE, WHY IT'S TOUGHER THAN A PIGS NOSE. Automobile tires. J. D. Jackson, Candler, N. C. Published Jan. 10, 1927.

10,722 SANTRO BREAST FORM NIPPLES. Nipples. Julius Schmid, Inc., New York, N. Y. Published Jan. 20, 1928.

Ford's Plans Not Affected by Restriction Repeal

The repeal of the Stevenson rubber act will not affect Ford's plans for growing rubber in Brazil, according to a statement credited to the noted tire manufacturer who is now visiting in Europe. Mr. Ford in an interview said that Thomas A. Edison was still busy trying to work out a substitute for rubber.

"We may never make a tire, but we will supply tire producers," Mr. Ford insists.

Statement of India Rubber World

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of the INDIA RUBBER WORLD, published monthly, at New York, N. Y., for April 1, 1928.

State of New York } ss.:
County of New York }

Before me, a notary public in and for the state and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of the INDIA RUBBER WORLD, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, The India Rubber Publishing Co., 420 Lexington Ave., New York, N. Y.; Editor, Henry C. Pearson, 420 Lexington Ave., New York, N. Y.; Managing Editor, William M. Morse, 420 Lexington Ave., New York, N. Y.; Business Manager, E. M. Hoag, 420 Lexington Ave., New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) The India Rubber Publishing Co., Henry C. Pearson; Edward Lyman Bill, Inc., Caroline L. Bill, Edward Lyman Bill, Raymond Bill, Randolph Brown, H. R. Brown, Carleton Chace, Wm. A. Low, Lee Robinson, J. B. Spillane, B. B. Wilson—all located at 420 Lexington avenue, New York, N. Y.; Edward Van Harlingen, 209 South State street, Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. HOAG, Business Manager.

Sworn to and subscribed before me this 27th day of March, 1928.

[SEAL] WM. A. LOW,
Notary Public, N. Y. Co. No. 695, Reg. No. 9502.
Certificate filed in Queens Co. No. 4826.
(My commission expires March 30, 1929.)

Legal

Trade Marks

ZIP-ON AND ZIPPER. The B. F. Goodrich Co. v. Clive E. Hockmeyer (Zip-On Mfg. Co., substituted). Cancellation 1416. Commissioner of Patents. Petition brought to cancel the mark "Zip-On" used on clothing on the ground that such mark would be confused with the petitioner's mark "Zipper" used on overshoes. This was an appeal by the petitioner from the decision of the examiner of interferences dismissing its petition for the cancellation of trade mark registration No. 192,312, issued Dec. 2, 1924, and recommending that said registration be not canceled. The decision of the examiner of interferences was affirmed. The registrations of the trade marks "Zip-Knick," "Zip-Over" and "Zip-Midy" for apparel were likewise held allowable.

Customs Opinions

TOY RUBBER SPONGES. No. 5371.—Protest 128059-G of Calhoun, Robbins & Co. (New York). Rubber Sponges—Toys—Rubber sponges in the shape of animals classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable as manufactures of india rubber at 25 per cent under paragraph 1439. Opinion by J. Sullivan. In accordance with stipulation of counsel and on the authority of United States v. Globe Overseas Corp. (13 Ct. Cust. Appls. 10; T. D. 40849) rubber sponges were held dutiable under paragraph 1439 as claimed.—*Treasury Decisions*, Vol. 53, p. 39.

TIRES. No. 5496.—Protest 99488-G of Aero Tire Co. (Pittsburgh.) Automobile Tires—Rubber Manufactures. Merchandise invoiced as solid rubber inner automobile tires, classified as manufactures of india rubber at 25 per cent ad valorem under paragraph 1439, tariff act of 1922, is claimed dutiable under the provision for automobile tires in chief value of rubber at 10 per cent under the same paragraph. Opinion by J. McClellan. It was held that the provision for tires in paragraph 1439 seems to contemplate complete tires for the articles named therein, while the evidence in this case is that the merchandise involved is used for and serves the same purpose as an inner tube and that it can not be practically used alone as an automobile tire. The protest was therefore overruled.—*Treasury Decisions*, Vol. 53, p. 46.

Adjudicated Patents

FOOTBALLS, etc. (C. C. A. Mass.) The Taylor patent, No. 1,279,936, for improvements in footballs and basket balls involving valved air tube and cover with inside flap, claim 5 held anticipated. Seamless Rubber Co. v. Stall & Dean Mfg. Co., 23 F. (2d) 820.—*Official Gazette*, Vol. 369, p. 1.

FOOTBALLS, etc. (C. C. A. Mass.) The Taylor reissue patent, No. 15,755, for improvements in footballs and basket balls, claims 1, 2, and 3 held anticipated. Seamless Rubber Co. v. Stall & Dean Mfg. Co., 23 F. (2d) 820.—*Official Gazette*, Vol. 369, p. 1.

Patent Suits

DIPHENYLGUANIDINE PATENT. Supreme Court of the United States, No. 182. October Term 1927. Corona Cord Tire Co., petitioner, v. Dovan Chemical Co. respondent. On writ of certiorari to the United States Circuit Court of Appeals for the Third Circuit. The patent in suit relates to the vulcanization of rubber by the use of D. P. G. The opinion of the Court was delivered by Chief Justice Taft, whose decision was adverse to the Dovan Chemical Co., on the ground that Weiss was not the first discoverer of diphenylguanidine as a rubber vulcanization accelerator.

As a matter of additional interest, the Court of Appeals of the District of Columbia, in the patent interference case on D O T G, awarded the claims applied for to the DuPont inventor Scott. As a result of this it is expected that there will soon be issued to the DuPont company a patent covering the use of D O T G as an accelerator of vulcanization.

RUBBER BALLS. Protest 186850-G of Halle Bros. Co. (Cleveland). No. 5253. Rubber Balls—Toys.—Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402.

Opinion by J. SULLIVAN. On the record presented the protest was overruled. *Treasury Decisions*, Vol. 53, p. 16.

RUBBER BALLS. Protest 230651-G of B. H. Dyas Corp. (Los Angeles). No. 5368. Rubber Balls—Toys. Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402. Opinion by J. SULLIVAN. In accordance with stipulation of counsel and on the authority of United States v. Stewart (12 Ct. Cust. Appls. 533; T. D. 40734) the rubber balls in question were held dutiable under paragraph 1402 as claimed. *Treasury Decisions*, Vol. 53, p. 38.

RUBBER SPONGES. Protest 193164-G of Lord & Taylor (New York). No. 5385. Rubber Sponges—Toys—Rubber sponges classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 25 per cent under paragraph 1439. Opinion by J. Sullivan. In accordance with stipulation of counsel and the amended report of the appraiser small figures composed of sponge rubber were held dutiable as manufactures of india rubber under paragraph 1439 as claimed. United States v. Globe Overseas Corp. (13 Ct. Cust. Appls. 10; T. D. 40849) followed. *Treasury Decisions*, Vol. 53, p. 41.

TIRE. 887,997, E. B. Cadwell, vehicle tire, C. C. A., 2d Cir., Doc. 9522, E. B. Cadwell et al. v. Firestone Tire & Rubber Co. Decree affirmed (notice dated Jan. 20, 1928). *Official Gazette*, Vol. 368, p. 263.

VULCANIZATION. 1,597,233, R. V. Heuser, vulcanization of rubber, filed Nov. 23, 1927, D. C. N. J. (Trenton), Doc. E 2959, A. C. Burrage et al. v. Roessler & Hasslacher Chemical Co. *Official Gazette*, Vol. 368, p. 264.

MACHINE FOR MANUFACTURING THIN RUBBER ARTICLES. 1,605,445, F. L. Killian, filed Jan. 25, 1928, D. C., N. D. Ohio (E. Div.), Doc. 2507, P. H. Stevens v. The Perfection Rubber Co. Doc. 2508, P. H. Stevens v. The Stardant Rubber Co. *Official Gazette*, Vol. 368, p. 264.

FLAP. 1,612,788, J. Walten, tire flap, appeals filed Feb. 1, 1928, C. C. A., 7th Cir., Doc. 4005, C. O. Tingley & Co. v. Badger Rubber Works. *Official Gazette*, Vol. 368, p. 712.

Vansul, Inc.

ILLUSTRATING THE ADVANTAGES OF WIDE, OPEN HEADED DRUMS OR CONTAINERS FOR PALM OIL AND OTHER RUBBER SOFTENERS. PHOTOGRAPH TAKEN IN PLANT OF C. KENYON CO., BROOKLYN, N. Y.

The Rubber Scrap Market

The rubber scrap market showed very little improvement the last week of March. Export demand was quiet. Following the official British announcement that the Stevenson Restriction Act would be terminated November 1 reclaimers showed but little interest in scrap. The decline in crude rubber prices to current low levels caused a waiting scrap market with prices nominal.

New York Quotations for Carload Lots

April 25, 1928

Boots and Shoes		
Boots and shoes, black	lb.	$0.01½ @ $0.01¾
Red and white	lb.	.00¾ @ .01
Trimmed arctics, black	lb.	.00¾ @ .01
Untrimmed arctics	lb.	.00¾ @ .01
Tennis shoes and soles	lb.	.00⅞ @ .01
Hard Rubber		
No. 1 hard rubber	lb.	.09½ @ .10
Battery jars, black compound	lb.	.01 @ .01½
Inner Tubes		
No. 1, floating	lb.	.05¾ @ .06
No. 2, compounded	lb.	.04 @
Red	lb.	.04¼ @ .04½
Mixed tubes	lb.	.03½ @
Mechanicals		
Mixed black scrap	lb.	.00½ @ .00¾
Heels	lb.	.00½ @ .00⅝
Hose, air brake	ton	20.00 @25.00
regular soft	ton	15.00 @16.50
No. 1 red	lb.	.02 @ .02½
No. 2 red	lb.	.01 @ .01½
White, druggists' sundries	lb.	.02½ @ .03
Mechanical	lb.	.01½ @ .01⅝
Tires		
Pneumatic Standard—		
Mixed auto tires with beads	ton	22.00 @23.00
Beadless	ton	30.00 @31.00
White auto tires with beads	ton	40.00 @42.00
Beadless	ton	50.00 @52.00
Mixed auto peelings	ton	32.00 @34.00
Solid—		
Mixed motor truck, clean	ton	20.00 @

Rubber and Guayule Imports

The following table summarizes imports of crude rubber and guayule from countries in other America (tropical America exclusive of Amazon Valley) and Africa into principal consuming countries with comparative annual totals for 1925 and 1926.

Year	Other America (Excluding Amazon)	Mexican Guayule	French Africa	British West Africa	Belg. Congo	Other West Africa	East Africa	Total Tons
1927	2,454	5,019	4,032	764	1,359	994	1,011	15,633
1926	2,998	4,306	5,259	749	441	1,201	1,063	16,017
1925	2,803	3,781	3,854	638	570	1,479	672	13,797

Exports of Rubber and Guttas to U. S. from Singapore

	1926 Lbs.	1926 Value	1927 Lbs.	1927 Value
Crude rubber	$07,223,484	$234,132,572	463,672,604	$167,721,140
Gutta jelutong	12,672,507	2,924,224	12,260,238	1,975,732
Gutta percha	1,155,386	323,878	519,731	116,890
Gutta siak	679,830	266,381	2,023,302	357,854
Gutta, reboiled	288,884	64,869	333,981	112,043
Gutta jangkar	.....	.....	4,844	1,764
Gutta kattlau	59,750	13,236	1,026,326	157,798
Gutta kay	51,690	11,238	.....	.....
Gutta soh	22,400	7,737	528,835	42,764
Total guttas, except jelutong	2,257,940	$687,339	4,437,019	$789,113

Compiled by Rubber Division, Dept. of Commerce.

RUBBER SHEETING IS MADE IN CANADA BY DOMINION RUBBER Co. and the Transparent Rubber Co. has recently installed machinery for the manufacture of rubber cloth as well as finished articles. Cloth of the type used in making aprons, baby pants, etc., is usually imported from the U. S. and locally made from the imported sheeting.

Preliminary Report of Dealers' Tire Stocks April 1, 1928

On April 1, 1928, the average stock of automobile and truck casings per dealer was 78.9, according to preliminary statistics reported by 22,583 dealers. This is 8.3 tires per dealer greater than April 1, 1927; 15.0 greater than on April 1, 1926, and 16.7 greater than on April 1, 1925. In past surveys the average number of tires per dealer has been increased slightly by the inclusion of late returns received after release of the preliminary report.

Dealers reporting stocks of balloon casings had an average of 40.1 per dealer, an increase of 4.6 tires per dealer or 13 per cent over last year. Balloon casings constituted 36.4 per cent of total casings April 1, 1928, as compared to 33.3 per cent on April 1, 1927. Inner tubes held by dealers average 121.2, as compared with the figure of 120.9 for April 1, 1927.

DEALERS' STOCKS OF AUTOMOBILE TIRES

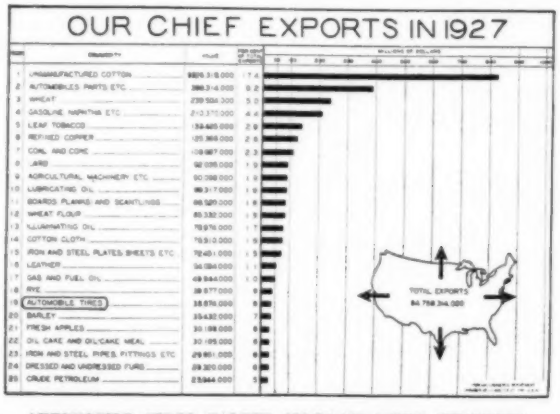
	April 1, 1928 Number	Dealers Reporting	Average Per Dealer	April 1, 1927 Number	Dealers Reporting	Average Per Dealer
Total casings (including balloons)	1,782,324	22,583	78.9	2,604,432	36,865	70.6
Balloon casings (alone)	649,115	16,173	40.1	868,312	24,431	35.5
Inner tubes	2,877,639	23,744	121.2	4,370,989	36,146	120.9
Solid and cushion tires	36,613	1,103	33.2	44,868	1,817	24.7

U. S. Tire Exports to Cuba

United States exports of the automobile tire class to Cuba increased in value from $1,865,255 in 1926 to $1,878,947 in 1927, or by less than one per cent. Exports of automobile casings increased in volume by 18 per cent, but unit values dropping from $11.83 to $9.75 forced a value decline of 2 per cent. Unit values of inner tubes and solid tires also declined. Exports of tire repair material increased in value 15 per cent. However, the export value of rubber tires to Cuba does not equal the exact consumption of American rubber tires. During 1927 Cuba returned to the United States rubber tires valued at $16,229. It is also apparent that a considerable amount was returned in 1926.

Overman Tires in Sweden

The two leading motor truck manufacturers in Sweden, Scania Vabis and Tidaholm, recently obtained an order for twelve trucks from Paragas Kalkbergs Aktb., a very large company in Finland. Scania Vabia will deliver nine units and Tidaholm three. The trucks will be equipped with Overman tires manufactured by Nordiska Overmanring Aktb., Stockholm.



AUTOMOBILE TIRES VALUED $36,674,000 WERE EXPORTED FROM THE U. S. DURING 1927, RANKING 19 IN THE LIST OF 100 CHIEF EXPORTS ACCORDING TO VALUE.

H. MUEHLSTEIN & COMPANY, Inc.

41 East 42nd St., New York City

Crude RUBBER *Scrap*

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327 So. La Salle Street

AKRON
1111 Akron Savings & Loan Bldg.

BOSTON
176 Federal Street

LOS ANGELES
728 So. Hill Street

NEW YORK
Liggett Bldg., 42nd St. and Madison Ave.

LONDON, ENGLAND

HAMBURG, GERMANY

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THE XYLOS RUBBER CO.
AKRON, OHIO

Review of the Crude Rubber Market

The Rubber Exchange of New York, Inc.

TRANSACTIONS on the Rubber Exchange from March 23 to April 27 inclusive were 18,620 lots, equivalent to 66,550 tons. This turnover is considerably less than that of the month previous although it included the most active since the brief history of the Exchange.

Trading April 2 was mild in character with spot closing at 26.8 cents. On the following day spot advanced to 27.1 cents. Official notice was received April 4 that Premier Baldwin's Civil Research Committee had recommended the removal of restriction, November 1, 1928, on plantation rubber exports. This announcement took the market by surprise, sentiment instantly turned bearish and the flood of selling orders which ensued made it almost impossible to record all the individual sales. All records for volume of business in a single hour, as well as for the day, were surpassed. In the first hour 1,439 contracts were sold, exceeding by 347 the sales for that period done on March 19. The transactions for the day totaled 3,594 contracts or 8,985 tons. The market declined sharply under the bear raid and spot fell to 21.0 cents at the close.

Following this drop of 6 cents there came another of 3 cents when the market reopened after the Easter recess. Thereafter price recession proceeded steadily and in orderly fashion each day as sales pressure decreased and the market assumed a generally dull tendency owing to the lack of buying support of manufacturers.

Viewed by weeks, conditions of the week ended March 30 were generally quiet and steady awaiting the promised announcement by Premier Baldwin on the future of export restriction. However, news of a distinctly bearish nature was not anticipated.

The week ended April 7 was dominated by Premier Baldwin's statement that restriction is to be abolished after November 1 next. Previous to this announcement the market had been listless and awoke with a shock and plunged into heavy selling for the latter half of the week with prices sinking without support.

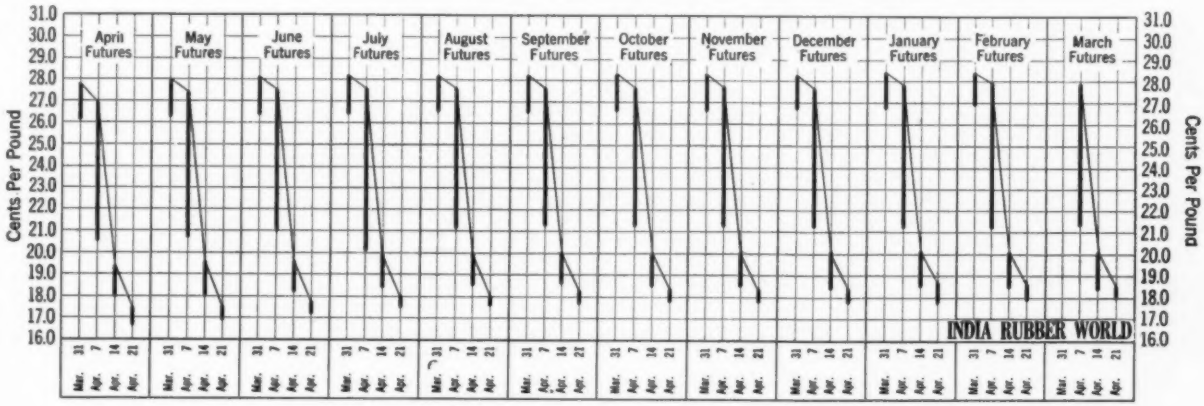
During the week terminated April 14 the market showed decrease in activity over the week previous. Prices declined to new low levels and the market closed very steady.

In the week ended April 21 further easiness developed in the price of rubber following the decline in London. This attracted considerable buying in New York and prices firmed up and closed quite steady.

The following comparison and outlook, by F. R. Henderson, president of the Rubber Exchange, on the rubber prices today with the low prices prevailing in 1922 is of special interest.

The figures give a comparison with 1922, the last time rubber was at a similar price level. The consumption and production figures for 1928 are necessarily estimated.

New York Rubber Exchange—High and Low Monthly Futures



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND

	March						April																
1928	26	27	28	29	30	31	2	3	4	5	6*	7*	9	10	11	12	13	14	16	17	18	19	20	21
March...	26.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
April....	26.1	27.1	27.8	27.5	27.0	26.8	26.6	26.9	21.0	20.5	...	...	19.4	18.0	18.0	18.5	18.5	18.5	17.4	16.6	17.0	17.2	16.7	16.9
May.....	26.2	27.3	28.0	27.6	27.2	27.0	27.0	27.4	21.0	20.7	...	...	19.6	18.0	18.2	18.6	18.7	18.7	17.5	16.9	17.3	17.5	16.9	17.1
June.....	26.3	27.3	28.1	27.7	27.4	27.1	27.1	27.5	21.1	21.0	...	...	19.6	18.2	18.3	18.8	19.0	18.9	17.7	17.2	17.5	17.6	17.3	17.3
July.....	26.4	27.4	28.2	27.7	27.5	27.1	27.2	27.6	21.2	21.1	...	...	19.9	18.4	18.5	18.9	19.0	19.0	17.9	17.5	17.7	17.7	17.5	17.6
August..	26:5	27.5	28.2	27.9	27.6	27.2	27.3	27.6	21.2	21.1	...	...	19.9	18.5	18.6	19.0	19.0	19.1	18.0	17.6	17.8	18.0	17.7	17.9
September	26.5	27.6	28.2	28.0	27.6	27.3	27.3	27.6	21.3	21.2	...	...	20.0	18.6	18.6	19.1	19.1	19.2	18.1	17.7	18.0	18.2	17.9	18.1
October..	26.6	27.6	28.3	28.0	27.7	27.3	27.3	27.7	21.3	21.2	...	...	20.0	18.5	18.6	19.1	19.1	19.2	18.1	17.8	18.0	18.3	18.0	18.2
November	26.6	27.6	28.3	28.0	27.7	27.3	27.4	27.7	21.3	21.2	...	...	20.0	18.5	18.6	19.1	19.1	19.2	18.1	17.8	18.0	18.3	18.1	18.2
December	26.7	27.7	28.3	28.1	27.7	27.3	27.4	27.7	21.3	21.2	...	...	20.0	18.4	18.5	19.1	19.2	19.2	18.1	17.8	18.1	18.4	18.1	18.3
1929																								
January.	26.8	27.8	28.4	28.2	27.8	27.4	27.5	27.8	21.4	21.2	...	...	20.1	18.5	18.6	19.1	19.0	19.3	18.3	17.8	18.2	18.6	18.1	18.4
February,	26.9	27.9	28.4	28.2	27.9	27.5	27.6	27.9	21.5	21.2	...	...	20.1	18.5	18.6	19.1	19.0	19.3	18.2	17.9	18.2	18.6	18.2	18.4
March...	...	...	...	...	...	...	27.6	27.9	21.6	21.3	...	...	20.1	18.4	18.6	19.0	19.0	19.2	18.2	18.0	18.2	18.5	18.2	18.5

*No market.

	1922 Price About 15¢ per lb.	1928 Price About 19¢ per lb.
Consumption	390,000	620,000
Production	400,000	650,000
Stocks	230,000	252,000

The important feature of the figures is the relation of stock to requirements, and it will be seen that in 1922 the world stocks represented about seven months' world consumption, while in 1928 the world stock represents about five months' consumption. In connection with world stock, consideration must be given to the time required for transport from point of production to point of consumption, which is sixty days.

In 1922 we were hardly over the deflation of 1921 and its effect on the rubber industry as a whole. Stocks of tires were large, general business all over the world was in an upset condition, and, last but not least, the crude rubber market was confined to producers, consumers and a small group of traders. Today, with business conditions in Europe improving beyond all expectations, and conditions in this country without precedent, tire stocks on a normal basis with an excellent outlook, it is no wonder that investors are being attracted by the present price levels for rubber. The Exchange offers facilities for the outside speculator to buy futures at the present level, believing in the ultimate value of rubber based on information obtainable as to its cost of production.

Restriction remains in force until November 1, as announced, and there is a great deal of speculation as to the size of the shipments immediately after that date. The present price level, however, is not conducive to hoarding, and, while there will undoubtedly be a sudden release of a substantial quantity, there is nothing in the position at present to justify anxiety.

The latest from London indicates that the producing element has settled down to tackling the problem in a business-like manner. The Rubber Growers Association has issued a circular to members urging that the estates increase their production gradually, and in first grades only, to avoid the accumulation of excessive stocks. A large percentage of native rubber is produced on what is called a fifty-fifty basis. The native owner engages labor to tap the trees on this profit sharing plan. It is generally conceded that at present market prices this system will largely disappear. A falling off in shipments of native rubber is to be expected in the near future. This may largely offset the increased output on the estates proper.

Sales of Seats

Six seats on the Rubber Exchange were sold between March 26 and April 18, as follows: The extra membership of Lucius D. Tompkins, of the General Rubber Co., was sold to L. W. Dumont, for the account of another, for $8,000; George J. Schwob sold his seat to William H. Stiles for $9,000; that of Jacob Bleibtrou was sold to Charles Slaughter, of W. R. Craig & Co. for $10,000. On the same day the membership of Leonid Postnikoff, of Harris, Irby & Vose, was purchased by J. Chester Cuppia, of E. A. Pierce & Co., for $11,000, an advance of 1,000 per cent over the original price of memberships when the Exchange was opened two years ago. Two more seats were also sold at this price, namely, Lewis D. Raabin, of H. Hentz & Co., sold an extra membership to Robert L. Baird, of the Baird Rubber Trading Co., Inc., and Werner S. Hammesfahr, a charter member, purchased for another, the seat of Frederick A. Neischlag.

New Market Rules

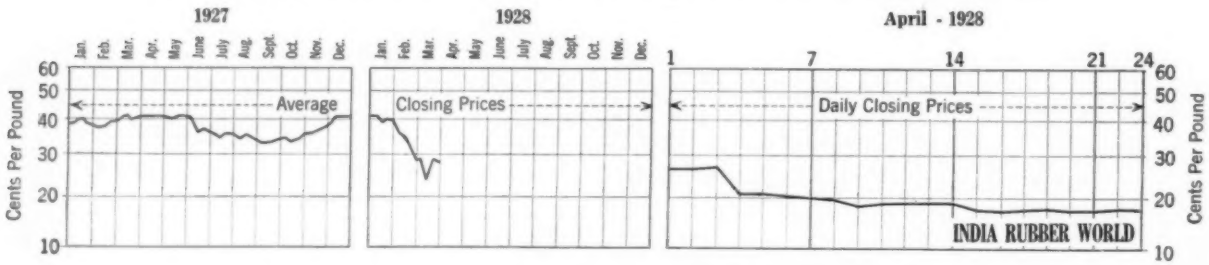
The Board of Governors of the Rubber Exchange on April 19 adopted and gave immediate effect to three new rules. The most important one deals with the non-delivery of rubber through the action of exceptional contingencies. Questions of such a nature are to be brought before the Governors, who, by a two-thirds vote, may settle to the best interests of both buyer and seller and the Exchange when conditions arise that prevent the delivery as called for in the contracts.

The other rules concern the delivery of rubber on the docks and the floor brokerages earned by officers of corporations. At the same meeting seventeen amendments and additions to the by-laws were adopted. One of these increased the fee on transfer of membership from $100 to $300 and another covers liens on membership whereby members having claims against each other arising out of an Exchange contract shall have a lien upon the debtor member for the amount of the indebtedness.

London and Singapore

The dull and steady market of the last week of March was displaced early the following week with the excitement and sharp decline that followed in New York on the announcement of the termination of restriction after November 1, 1928. The subsequent downward course of prices in London was virtually paralleled by those in New York.

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	March, 1928						April, 1928														
PLANTATIONS	26	27	28	29	30	31	2	3	4	5	*6	*7	9	10	11	12	13	14	16	17	18	19	20	21
Sheet																								
Ribbed smoked	26⅛	27	28	27⅝	27¼	26⅞	26⅞	27¼	21	20⅞	....	....	19⅝	18	18⅜	18⅝	18⅝	18⅜	17½	17⅛	17¼	17½	17¼	17⅛
Crepe																								
First latex	26½	27¼	28¼	27¼	27⅜	27⅜	27⅜	27½	21¼	21⅛	....	....	19¾	18⅜	18½	18⅞	18⅞	18⅞	17¾	17¼	17⅜	17¾	17⅜	17⅜
No. 2 blanket	24½	25⅜	26⅛	26⅛	25¾	25½	25⅜	26	19¾	19¼	....	....	18¼	17	17¼	17⅜	17½	17½	16½	16¼	16⅜	16½	16⅛	16⅜
No. 3 blanket	23¾	24½	25⅛	25¼	25⅛	24⅝	24⅝	25½	19¼	19	....	....	17⅜	16⅜	16¾	16⅞	17	17⅛	16⅛	16	16	16¼	15¾	15⅞
No. 4 blanket	22⅝	23⅝	24⅜	24¾	24½	23¾	24	24⅞	18¾	18½	....	....	17¼	15⅞	16⅛	16½	16⅝	16⅝	15⅝	15½	15½	15⅝	15¾	15⅜
Thin clean brown	23⅛	24⅛	25¼	25¼	25	24½	24½	25¼	19	18⅞	....	....	17⅜	16⅜	16¾	16⅞	17	17⅛	16⅛	15⅞	16	16¼	15⅞	15⅞
Rolled brown	21½	22½	22⅞	22¾	22½	22½	22⅛	22½	17¾	17⅛	....	....	16⅝	14⅞	15⅛	15⅛	15⅛	15⅛	14¾	14½	14⅝	14⅞	14¾	14⅜
Off latex	26	26⅞	27¼	27⅛	27¼	26⅞	26⅞	27¼	20⅞	20¾	....	....	19½	18	18¼	18⅜	18½	18½	17⅜	17⅛	17¾	17⅜	17⅛	17¼

*Holiday.

New York Outside Market

The course of the outside market was marked by expectancy during the last week of March when little was done in consequence. After the sharp break in prices that came early in April consuming interests did very little buying but stood by simply as spectators to the decline. In the month's interval prices for spot ribbed smoked sheets fell from 26¼ cents, buyers, 26⅜ cents, sellers, on March 26 to 21¼ cents, buyers, 21½ cents, sellers, on April 4 when the big break occurred. The decline continued steadily day by day until ribs were 17⅛ cents, buyers, 17½ cents, sellers, on April 21. This price level attracted strong buying interest on the part of consumers who in many instances made commitments extending to the end of this year or beyond.

During the week ended March 31 the market was rather quiet with just sufficient factory inquiry to establish prices. There was also continuous uncertainty as to the import of the promised announcement by the British premier on the restriction plan. Meantime traders were evening up their accounts in anticipation. Prices during the week fluctuated between 26¼ and 27¾ cents.

The week closed April 7 was a brief one in the market, no business being done on Good Friday or the day following. On April 2 and 3 prices held steady. Wednesday morning on receipt of news from London that restriction would be removed as of November 1, 1928, prices broke sharply about 6½ cents on all positions. Trading was wild with sellers on every side. Toward the close there was some profit taking by shorts. On April 5 the last day of trading before the holidays prices receded about one cent more but closed at about the level of the previous day on short covering.

The market for the week terminated April 14 opened steady and gradually eased off showing a loss of 1¼ to 1½ cents a pound on practically all positions. The factories continued uninclined to enter the market for any great quantity of rubber, satisfied that prices would go still lower. As declines of the past week brought the price near to production costs sellers became more cautious and many shorts evened up their position. There was no extensive buying on the part of factories and their bids were generally below the market and kept continuously below it as the declines continued.

The market of the week ended April 21 showed a steadier tone. The shorts were covering and others buying feeling assured that safe prices had been reached. It was reported that foreign operators short on the market were heavy buyers and in some instances their profits were so large that they paid a slight premium in order to be certain to protect them. There was a fair amount of factory buying for the last half of this year and even into next year based on the belief that prices are fair and consumption will be large enough to absorb the increased supplies.

During the last week of the month prices became steady, and ribs sold for 17 cents on April 25.

Paras were dull, neglected and lower in sympathy with plantations. Balatas almost absolutely neglected.

Importations of all grades in March were 40,894 tons, compared with 35,078 tons one year ago. Plantation arrivals for March were 37,545 tons, compared with 33,114 tons one year ago. Total importations of plantation rubber for three months ended March 31 were 109,065 tons, compared with 101,086 tons for the corresponding period of 1927. Total importations of all grades of rubber for three months ended March 31 were 116,582 tons, compared with 108,639 tons for the corresponding period of 1927.

RUBBER AFLOAT TO THE UNITED STATES

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total Long Tons
March 31..	2,652	528	1,028	776	4,984
April 7...	3,061	718	1,381	882	6,042
April 14...	3,097	606	1,585	209	5,497
April 21...	4,190	42	1,215	2,535	7,982

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago and April 25, the current date:

Plantation Hevea	April 25, 1927	March 26, 1928	April 25, 1928
Rubber Latex (Hevea)..gal.	$1.50 @	$1.50 @	$1.50 @
CREPE			
First latex, spot	.41¼ @.41½	.28 @	.17¼ @.17½
April	.41¼ @.41½	.28 @	.17¼ @.17⅜
May-June	.41 @.41¼	.28½ @	.17¼ @.17½
July-September	.42 @.42¼	.29 @	.17¾ @
October-December	@	.29½ @	.18 @
Off latex, spot	@	.27¾ @	@
Amber No. 2, spot	.38½ @.38¾	.26 @	.16 @.16¼
April	.38½ @.38¾	.26 @	.16 @.16¼
May-June	.38¾ @.39	.26½ @	.16 @.16¼
July-September	.39¼ @.39½	.26¾ @	.16½ @.16¾
October-December	@	.27¼ @	.16¾ @.17
Amber No. 3, spot	.38¼ @	.25½ @	.15¾ @
Brown, thin, clean	.38 @	.25 @	.15½ @.15¾
Brown specky	.37 @	.24½ @	.15¾ @
Brown, roll	.35½ @	.22 @	.14½ @.15
Sole crepe	@	@	@
Sheet			
Ribbed, smoked spot	.41 @.41¼	.27⅜ @	.17 @
April	.41 @.41¼	.27⅜ @	.16¾ @.17
May-June	.41¼ @.41½	.28 @	.17 @.17¼
July-September	.41¾ @.42	.28½ @	.17¾ @.17½
October-December	.42⅝ @.42¾	.29 @	.17⅝ @.17¾
East Indian			
PONTIANAK			
Banjermassin	.09 @.10	.09 @.10	.08½ @.09¼
Pressed block	.16 @.17	.14¾ @.15	.14 @.14½
Sarawak	.10 @	.10 @	.09½ @
South American.			
PARAS			
Upriver, fine	.33 @	.24½ @	.17½ @.17¾
Upriver, fine	*.43½ @	*.32½ @.33½	*.26½ @
Upriver, medium	.29 @	.21 @	.15½ @
Upriver, coarse	.24½ @	.19¾ @	.15 @
Upriver, coarse	*.38½ @	*.27 @.28	*.23 @
Islands, fine	†.31 @	.22 @	@
Islands, fine	*.42 @	*.31 @.32	*.26 @
Acre, Bolivian, fine	.33½ @	.24¾ @	.18 @
Acre, Bolivian, fine	*.44 @	*.33 @.34	*.27 @
Beni, Bolivian	.34 @	.25¼ @	.19 @
Madeira, fine	.33½ @	.24¼ @	.18 @
Peruvian, fine	.32 @	.22¾ @	.17 @
Tapajos, fine	.32 @	.22¾ @	.17 @
CAUCHO			
Upper caucho ball	.26 @	.19 @	.15 @
Upper caucho ball	*.38½ @	.27 @.28	*.23 @
Lower caucho ball	.24½ @	.18½ @	@
Maniçobas			
Ceará negro heads	.24 @	†.18 @	†.17 @
Ceará scrap	.12 @	†.10 @	†.09 @
Maniçoba, 30% guaranteed	.22 @	†.20 @	†.19 @
Mangabiera, thin sheet	.24 @	†.20 @	†.19 @
Centrals			
Central scrap	.25 @	.19 @	.15 @.15½
Central wet sheet	.17 @	.17 @	@
Corinto scrap	.25 @	.19 @	.15 @.15½
Esmeralda sausage	.25 @	.19 @	@
Guayule			
Duro, washed and dried	.33 @	.25 @	.20 @
Gutta Percha			
Gutta Siak	.21½ @.22	.19½ @.20	.18 @.18½
Gutta Soh	.38 @.40	.37 @	.29 @
Gutta Macassar	3.00 @	3.00 @3.10	2.90 @3.00
Balata			
Block, Ciudad Bolivar	.37 @.38	.40 @.42	.39 @.40
Colombia	.35 @.36	.42 @	.42 @.43
Manaos block	.42 @	.43 @	.46 @
Panama	@	.41 @	@
Surinam, sheet	.62 @	.54 @.55	.51 @.52
Amber	.66 @	.57 @.58	.54 @
Chicle			
Honduras	‡.65 @	‡.65 @	‡.65 @
Yucatan, fine	‡.65 @	‡.65 @	‡.65 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Low and High New York Spot Prices

Plantations	1928*	April 1927	1926
First latex crepe	$0.17¼ @ $0.27¾	$0.40¾ @ $0.41¾	$0.47¼ @ $0.60
Smoked sheet, ribbed	.17 @ .27½	.40½ @ .41½	.47 @ .59½
Paras			
Upriver, fine	.16¾ @ .24	.32¼ @ .33	.40 @ .53¼
Upriver, coarse	.14 @ .21	.24½ @ .26¼	.28 @ .38
Islands, fine	.....	.28½ @ .29¼	.35 @ .48

*Figured to April 21, 1928.

Reclaimed Rubber Market

The rubber industry in general is consuming more reclaimed rubber of all grades than ever before, because of its permanent value as a compounding ingredient, and there is no appreciable change despite the low price of rubber.

The demand for whole tire reclaim continues active and is consuming all offers of tire scrap. Tube reclaims being more sensitive than any other grade are therefore following the downward trend of the crude rubber market. The price of tube scrap will doubtless adjust itself to the level established by the demand for tube reclaim.

New York Quotations

April 25, 1928

	Specific Gravity	Price Per Pound
Auto Tire		
Black	1.21	$0.07½ @ $0.08
Black, washed	1.18	.09½ @ .10
Black selected tires	1.18	.08¼ @ .08½
Dark gray	1.35	.10½ @ .11
Light gray	1.38	.12 @ .12½
White	1.40	.14 @ .14½
High Tensile		
Super-reclaim, No. 1 black	1.20	.14 @ .14¼
No. 2 black	1.20	.11¾ @ .12
High tensile red	1.20	.13¾ @ .14
Shoe		
Unwashed	1.60	.07¼ @ .07½
Washed	1.50	.10 @ .10¼
Tube		
No. 1	1.00	.14½ @ .15
No. 2	1.10	.11½ @ .11¾
Miscellaneous		
Red	1.35	.13½ @ .14
Truck tire, heavy gravity	1.55	.07¼ @ .07½
Truck tire, light gravity	1.40	.07¾ @ .08
Mechanical blends	1.60	.07 @ .08

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, Malay House, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported in March last totaled 27,813 tons. The amount of rubber imported was 10,508 tons of which 7,935 tons were declared as wet rubber. The following are comparative statistics:

	1927		1928	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	34,946	14,995	27,731	16,618
February	27,528	11,697	28,813	12,911
March	41,346	17,462	27,813	10,508
Totals	103,820	44,154	84,357	40,037

Note—The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of February and March, 1928:

	February, 1928 Tons	March, 1928 Tons
United Kingdom	5,743	4,675
United States	19,842	18,694
Continent of Europe	1,209	1,634
British Possessions	544	696
Japan	1,454	2,088
Other foreign countries	21	26
Totals	28,813	27,813

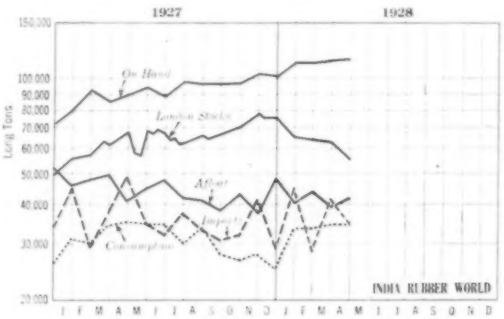
RUBBER GLOVES ARE MADE IN CANADA BY DOMINION, Seiberling, the Sterking Rubber Co., the Transparent Co., and a few smaller concerns. American companies find competition difficult, but are favored for acid resisting and linemen's gloves. Styles are similar to those in the U. S.

ACCORDING TO *Our World Trade* THE NUMBER OF TIRE casings and solid tires exported during 1927 was 2,728,000 as compared to 1,595,000 in 1926. Pneumatic tubes likewise show an increase with a total of 1,631,000 for 1927 and 1,127,000 for 1926.

Imports, Consumption and Stocks

The accompanying graph covers the crude rubber importation, consumption and stocks for 1925, 1926, 1927, and the first four months of 1928.

Stocks now on hand in the United States are estimated at 115,000 tons. Stocks afloat so far this year have exceeded 41,000 tons monthly. March imports were 40,894 tons and are estimated at 35,000 tons for April. London stocks diminished 1,378 tons between March 31, and April 21. On the latter date they were 56,819 tons.



U. S. Imports, Consumption and Stocks

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

		Stocks			Singapore and
	Imports Tons	Consumption Tons	On Hand† Tons	Afloat† Tons	London Tons	Penang Tons†
1925						
Twelve months.	384,837	389,136	51,000*	48,000*	.....	.....
1926						
Twelve months.	411,900	358,415	72,510*	52,019*	.....	.....
1927						
Twelve months.	426,258	439,034	369,747	47,939	63,207	25,868
1928						
January	46,200	34,403	110,114	41,256	66,285	25,868
February	29,445	33,703	108,955	43,316	62,500	22,867
March	40,894	35,688	114,061	39,324	61,000	.....
April (est.)	35,000	34,000	115,000	42,000	55,000	.....

*December 31.
†The first of each month.

Ceylon Rubber Exports

January 1 to January 31, 1928

	Tons
To United Kingdom	1,059.16
Continent	268.30
Australia	13.45
America	2,977.55
Egypt	1.00
Africa	4.16
India	5.25
Japan	16.36
Total	4,345.23
For the same period last year	6,641.00

ANNUAL EXPORTS 1921-1927

	Tons
For the year 1927	55,355.77
1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

Plantation Rubber Exports from Malaya*

January 1 to February 29, 1928

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	860.69	1,271.91	924.30
British Possessions	473.77	70.00	.....
Continent of Europe	1,250.80	134.67	412.11
United States	28,269.35	4,788.49	1,504.09
Japan	1,751.00	399.50	246.00
Other Countries	19.83	.....	.....
Totals	32,625.44	6,664.57	3,086.50

*Excluding all foreign transhipment.

Compounding Ingredients Market

TIRE production continues with undiminished activity at full schedules. In consequence the demand for compounding ingredients is well sustained. While the other lines of rubber goods do not exhibit relatively the same activity as tires and tubes, they are seasonally busy and are utilizing normal tonnages of compounds, particularly accelerators, anti-oxidants, reinforcing pigments. M. R., etc.

ACCELERATORS. The past month has seen no new accelerators added to the market list. There is now an excellent assortment of well authenticated accelerators available to meet the most exacting requirements of every rubber line. Some attention is being given to the effect of accelerators in conjunction with various softeners with a view of selecting the most favorable combinations. Also a simple chemical means has been discovered to prevent accelerators from scorching rubber.

ANTI-OXIDANTS. The most recent newcomer on the anti-oxidant list is Resistox for which the claim is made that it is good as an accelerator as well as an anti-ager. In the latter capacity it does not appreciably affect the brightness of light colored or white goods.

BENZOL. Benzol is becoming competitive with gasoline as motor fuel. The price for the pure grade is relatively low and the demand steady.

CLAY. All compounding grades are in active demand. This material has reinforcing value not shared by other cheap fillers and has thus become popular.

DEGRAS. Demand is fair and prices low and steady.

LITHARGE. The price is guaranteed against decline to June 30. The demand is seasonal and good.

LITHOPONE. Rubber manufacturers are drawing stocks in good volume. Production of the leading makers is reported sold up for the first half of the year and the market is stable.

SOLVENT NAPHTHA. There is a normal seasonal demand. Makers of rubber weatherproofed goods continue to take regular contract quotas.

STEARIC ACID. This material has already gained acceptance as a desirable ingredient for stabilizing the cure of rubber and is in steady demand.

ZINC OXIDE. Improved demand is expected. The material is now moving seasonally at well sustained prices.

Accelerators. Inorganic

Lead, carbonate	lb.	$0.08½	@
Lead, red	lb.	.09½	@
sublimed white	lb.	.07¾	@
sublimed blue	lb.	.07¼	@
super-sublimed white lead	lb.	.08¼	@
Lime, R. M. hydrated	ton	12.80	@
Litharge	lb.	.08½	@
Magnesia cal., U. S. P.	lb.	.45	@ .60
calcined, extra light	lb.		@
calcined, heavy	lb.	.04	@
carbonate, U. S. P.	lb.	.08	@ .09
Orange mineral A.A.A.	lb.	.11½	@

Accelerators. Organic

A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
Aldehyde ammonia	lb.	.65	@ .70
B. B.	lb.		@
Captax	lb.		@
Crylene, hard form	lb.		@
Paste	lb.		@
Di-ortho-tolylguanidine	lb.	.49	@ .85
Diphenyl guanidine	lb.	.41	@ .68
Ethylidine aniline	lb.	.60	@ .65
Formaldehyde aniline	lb.	.36	@ .38
Grasselerator 102	lb.	.62½	@ .67½
552	lb.	4.45	@
808	lb.	1.05	@ 1.35
833	lb.	1.55	@ 1.75
Heptene	lb.	.55	@
Hexamethylene tetramine	lb.	.60	@ .67½
Lead oleate, No. 999	lb.	.15	@
Witco	lb.	.14	@
Methylene dianiline	lb.	.37	@
Monex	lb.	3.25	@
Piperidine pentamethylene dithio carbamate	lb.	4.45	@ 4.60
Plastone	lb.	.36	@
R. & H. 40	lb.	.50	@ .55
50	lb.	.50	@ .55
Safex	lb.	1.25	@
Super-sulphur, No. 1	lb.		@
No. 2	lb.		@
Tensilac No. 39	lb.	.55	@ .60
No. 41	lb.	.65	@ .70
Thermlo F	lb.	.50	@ .55
Thionex	lb.	3.25	@
Thiocarbanilid	lb.	.23	@ .28
Trimene	lb.	.75	@
base	lb.	1.20	@
Triphenylguanidine	lb.	.65	@ .70
Tuads	lb.		@
Vulcanex	lb.	.65	@
Vulcanol	lb.	1.03	@
Vulcone	lb.	.65	@
ZBX	lb.	2.50	@
Z-88	lb.	.65	@ .75
Zimate	lb.		@

New York Quotations

April 25, 1928

Acids

Acetic 28% (bbls.)	100 lbs.	$3.37½	@$3.62½
glacial (carboys)	100 lbs.	12.41	@12.66
Sulphuric, 66°	100 lbs.	1.75	@

Alkalies

Caustic soda, solid	lb	.03	@

Anti-Oxidants

Age-Rite, powder	lb.		@
resin	lb.		@
Antox	lb.		@
Neozone	lb.	.74	@
Oxynone	lb.	.68	@ .90
Resistox	lb.	.54	@ .70
Stabilite	lb.	.65	@
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.08¼	@
Carbon (see Comp. Ing.)			
A. & W. nonfli No. 1	lb.	.40	@
Drop	lb.	.06	@ .10
Lampblack (commercial)	lb.	.09	@

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Du Pont, N.	100 lbs.	1.35	@
Marine, A. C.	100 lbs.	1.30	@
5 R.	100 lbs.	1.00	@
2 G.	100 lbs.	.90	@
Huber Brilliant	lb.	4.20	@
Prussian	lb.	.31	@ .55
Ultramarine	lb.	.06	@ .30

BROWN

Huber Mocha	lb.	1.60	@
Sienna, Italian, raw	lb.	.05½	@ .12½

GREEN

A. & W. green	lb.	1.25	@ 3.00
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
dark	lb.	.30	@ .33
Du Pont, A. C.	100 lbs.	3.00	@
4 G.	100 lbs.	.60	@
G. L.	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Huber Brilliant	lb.	3.85	@
Oxide of chromium	lb.	.32	@ .38

ORANGE

Du Pont, 2 R.	100 lbs.	1.40	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@
Huber Persian	lb.	.50	@

Colors—(Continued)

RED

A. & W. red	lb.	$0.75	@$3.50
purple	lb.	2.00	@ 4.00
Antimony, golden, No. 40	lb.		@
No. 60	lb.		@
golden 15/17%	lb	.21	@ .22
Aristi	lb.	2.75	@
Huber Brilliant	lb.	1.35	@
Antimony			
Crimson, R.M.P. No. 3	lb.	.48	@ .55
Sulphur free	lb.	.52	@ .65
7-A.	lb.	.35	@
Z-2	lb	.20	@
Vermilion, No. 5	lb.		@
No. 15	lb.		@
Du Pont, R. I.	100 lbs.	1.75	@
6 B.	100 lbs.	.90	@
Brilliant A. C.	100 lbs.	.90	@
Iron Oxides			
bright pure domestic	lb.	.12	@
bright pure English	lb.	.12	@ .14
bright reduced English	lb.	.08	@ .09½
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.11	@
Indian (maroon), reduced English	lb.	.07½	@ .09
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb	.03	@ .04½
Venetian reds	lb.	.02	@ .06
Vermilion, Eng. quicksilver	lb	1.90	@

WHITE

Lithopone	lb.	.05½	@ .05¾
Albalith	lb.		@
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05¼	@ .05¾
Sterling	lb.		@
Vanolith	lb.	.05¾	@
Titanox	lb.	.10	@ .10½
Zinc Oxide			
AAA (lead free)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06⅜	@ .06⅞
Z (8% leaded)	lb.	.06⅜	@ .06⅞
French Process			
Green seal	lb.	.10⅞	@
Red seal	lb.	.09⅞	@
White seal	lb.	.11⅞	@
Kadox	lb.		@
XX	lb.		@

YELLOW

A. & W. yellow	lb.	2.00	@ 4.00
Cadmium sulphide	lb.	1.35	@ 2.00
Chrome	lb.	.16	@ .17
Du Pont N.	100 lbs.	4.00	@
R. W.	100 lbs.	.78	@
Grasselli cadmium	lb.		@
Huber Canary	lb.	3.30	@
Ochre, domestic	lb.	.01¾	@ .02¾
Oxide, pure	lb.	.08	@
Zinc imported	lb	.25	@

New York Quotations

April 25, 1928

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	$21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate powd.	lb.	.12	@
lump	lb.	.11	@
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	58.00	@
Barytes, imported	ton	27.50	@
dry ground, white	ton	32.50	@
dry ground, off color	ton	22.50	@
No. 1 Missouri, water ground and floated, St. Louis	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04¾	@
pulp	ton	50.00	@
Carbon Black			
Aerfloted arrow	lb.	.08	@ .12
Compressed	lb.	.07½	@ .11½
Uncompressed	lb.	.07	@ .11
Micronex	lb.	.08	@ .12
Carrara filler	ton	20.00	@
Chalk, precipitated	lb.	.04¼	@ .04¾
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.01½	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton		@
Perfection	ton	14.00	@
Suprex	ton		@
Tensulite	ton	15.00	@
Cotton flock, black	lb.	.13	@
light-colored	lb.	.09	@ .10
white	lb.	.10	@ .28
Glue, high grade	lb.	.24	@ .28
low grade	lb.	.21	@ .25
Infusorial earth	lb.	.02¼	@
Mica, amber (fact'y)	ton	80.00	@
Pumice stone, powd.	lb.	.02½	@ .04
Rotten stone (bbls.)	lb.	.02½	@ .04½
Soap bark	lb.	.15	@ .16
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	18.00	@25.00
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Velvetex	lb.	.04	@ .07
Whiting:			
Commercial	100 lbs.	.85	@ 1.00
English, cliffstone	100 lbs.	1.50	@
Quaker	ton		@
Snow white	ton		@
Sussex	ton		@
Westminster Brand	100 lbs.		@
Witco (c.l.) (fact'y)	ton	12.00	@
Whiting, imp. chalk	100 lbs.	.90	@ 1.10
Paris White, Eng. Cliff	100 lbs.	1.65	@ 3.00

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.	$0.05	@$0.06
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton		@
Ohmlac Kapak, M. R.	ton	40.00	@90.00
M-4	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granulated	ton	52.00	@54.00
Robertson, M. R., solid (fact'y)	ton	39.00	@80.00
M. R. gran. (fact'y)	ton	38.00	@80.00
Vansul Puro	ton		@

Oils

Mineral	gal.	.18	@
Kerosene	gal.	.15	@
Rapeseed	gal.	.90	@
Red oil, distilled	lb.	.09¼	@ .10¼
Rubber process	gal.	.20	@
Spindle	gal.	.28	@
Vansulol	lb.	.10½	@

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.08½	@ .15
White	lb.	.08½	@ .16

Softeners

Burgundy pitch	100 lbs.	6.50	@
Atlas	100 lbs.	7.00	@
Corn oil	lb.	.11½	@
Cotton oil	lb.	.10½	@
Cycline oil	gal.	.28	@ .35
Degras	lb.	.03¼	@ .04½
Fluxrite (fluid)	lb.	.05	@ .06
Hexalin	lb.	.60	@
acetate	lb.	.70	@
Moldrite	lb.	.07½	@ .08½
Palm oil (Lagos)	lb.	.07½	@
Palm oil (Niger)	lb.	.07	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08¾	@ .09
Pigmentar	gal.	.33	@ .38
Pine oil, steam distilled	gal.	.68	@ .70
Rosin K	bbl.	9.60	@
Rosin oil, compounded	gal.	.50	@
deodorized	gal.	.54	@
No. 556	gal.	.47	@
Rubite	lb.		@

Softeners—*(Continued)*

Rubtack	lb.	$0.08½	@
Shellac, orange	lb.	.70	@
Stearex	lb.	.11	@ .15
Stearic acid, double press'd.	lb.	.11¾	@ .12¾
Tackol	lb.	.09	@ .15
Tar (retort)	bbl.	12.50	@13.00
Tasco W-S No. 1	lb.	.06	@
A	lb.	.05	@
Vantar (Pine Tar)	lb.		@

Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.27	@ .28
Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums)	lb.	.05	@ .06
tetrachloride (99.7%, 13.28 lbs. gal.) (drums)	lb.	.07	@ .07½
Gasoline			
No. 303			
Tankcars	gal.	.14	@
Drums, c. l.	gal.	.25	@
Drums, l. c. l.	gal.	.27	@
Dip-Sol	gal.	.11½	@
Rubberlene	gal.	.10½	@
Rub-Sol	gal.	.09½	@
Solvent naphtha	gal.	.35	@
Sweet rubber cement naphtha	gal.	.15	@
Turpentine, Venice	lb.	.18	@
steam distilled	gal.	.54	@ .56

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.)	100 lbs.	2.40	@ 2.75
(l.c.l.)	100 lbs.		@
Superfine commercial flour (210 lb. bbls.)	100 lbs.	2.55	@ 3.10
(100 lb. bags)	100 lbs.	2.20	@ 2.80
Tire brand, superfine	100 lbs.	1.90	@ 2.25
Tube brand, velvet	100 lbs.	2.40	@ 2.75
Vandex	lb.		@
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.	lb.	.53	@ .56
carnauba	lb.	.31	@ .54
ceresine, white	lb.	.10	@ .11
montan	lb.	.07	@ .07½
ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30
Paraffin			
122/124 white crude scale	lb.	.03	@
124/126 white crude scale	lb.	.03½	@
120/122 fully refined	lb.	.05¾	@
125/127 fully refined	lb.	.06	@

Glazed Rubber Molds

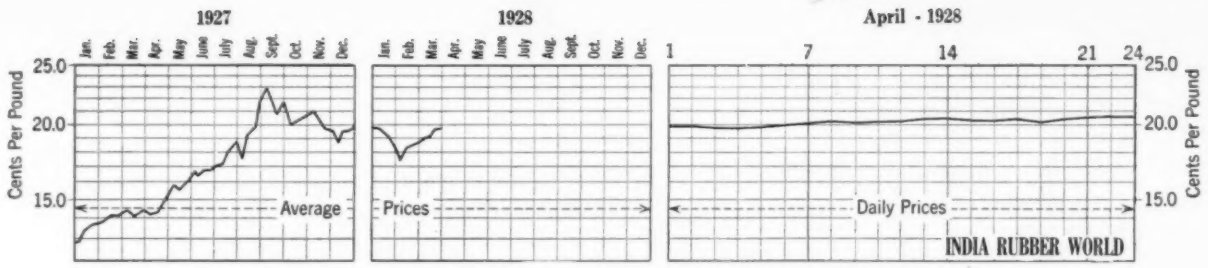
Soapy water, soap bark solution, and applications of finely powdered talc, mica, etc., have long been commonly used as mold surface applications to permit the easy removal of molded rubber articles after vulcanization. The common objection to such materials is that they gradually form hard burned coatings in the molds which require frequent cleaning off and consequent loss of production while the molds are out of use.

A method of glazing rubber mold surfaces has recently been invented[1] whereby the pores and interstices of the mold may be filled and a smooth surface presented to the rubber while curing. The simplest of several methods of mold glazing specified in the invention is to treat the thoroughly cleaned mold surfaces with a varnish or enamel having a baking temperature greater than that of the vulcanizing temperature of rubber compounds.

Practically any varnish that contains a fairly high percentage of linseed oil will answer the purpose, an example being that generally sold under the name of "spar." A thin solution of such a varnish may be sprayed evenly upon the surfaces of the mold by an ordinary atomizer or spraying device. Such a solution should be sufficiently thin to permit its penetration into the pores of the mold. A short air drying period will serve to permit volatilization of part of the solvent after which the mold may be subjected to an enamel burning or baking heat. Any metal coating varnish having a baking temperature ranging from 350 to 475 degrees F. is useful as a preliminary filler. The major portion of its volatile matter is expelled by baking at 300 to 350 degrees F. after which the heat of the mold can be gradually raised to the full baking heat of the particular varnish being used. A protracted baking period of one or more hours will suffice to cause the enamel to be thoroughly solidified upon the mold.

A mold thus treated has the advantage over the ordinary untreated mold of more readily releasing the molded article. Liquid lubricant may be used in such a mold in place of the usual soapstone dust thus facilitating the flow of the rubber in the mold. If it is desired to obtain a luster or glossy finish on the rubber article a second coating may be sprayed or painted with a brush upon the mold surfaces. This coating may be an enamel or varnish having heat resisting characteristics and including a solvent which may be completely volatile at ordinary temperatures. Such a coating, however, should have such characteristics when hardened that it may be dissolved or readily removed from the mold when it is eventually necessary to clean and resurface the mold. An enamel which when dried or baked would respond to the dissolving action of a caustic solution would be preferable.

[1] U. S. patent No. 1,662,365.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

Market for Cotton and Fabrics

AMERICAN COTTON. The price for middling spot cotton on April 1 was 19.0 cents compared with 18.95 cents on March 1. On the 12th of April it was 20.10 cents and on the 24th 20.9 cents. Cotton is reported making a slow start because of rain and low temperature and considerable replanting has been required. It is estimated by competent cotton authorities that the world will require a crop of at least 17,000,000 bales this year to prevent an upheaval in values.

EGYPTIAN COTTON. During the past month Egyptian futures in Alexandria touched $29 for new crop Uppers and $40 for new crop Sakel. At these prices the advance was overdone and spinners were driven out of the market. The spectacular advance of Sakels was due to fear of a water shortage and report that farmers would abandon Sakel for other growths. When heavy rains fell at the headwaters of the Nile, Egyptian speculators spread reports of another Mississippi flood and of a probable invasion of locusts in Egypt. The bull movement has strong backing and any adverse news will put the market up.

Uppers, while rising in sympathy with Sakels, have lagged far behind the general advance and the marked difference in price between them is attracting much attention. American staples are cheaper than ever compared with Uppers, and the difference in price between Middlings 1 3/16 inch American and Fully Good Fair Sakel make it seem that either the one or the other is far out of line in price.

ARIZONA COTTON. Supplies are practically exhausted. Probably the present high price of Sakel should encourage increased planting of Pimas this year. A large crop of Pimas is expected.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The demand for mechanical ducks has not been large. It is only a question of time when mills will have to advance prices if strength in raw cotton continues. Market conditions on fabrics of special construction are marked by a sharp demand for quick delivery. Seldom have such liberal values been passed to the buyer as during the past five months. A continuance of the improvement in volume demand shown in the past four months will tone the cotton goods market to the point of establishing a more equitable relation between costs and selling prices. While the buyers will still have the more favorable side of transactions as prices advance the mills will gradually eliminate the chief price difficulties which are now obtaining.

RAINCOAT FABRICS. The raincoat trade is very quiet. Improvement, however, has begun to be apparent.

SHEETINGS. For the past several weeks there has been a continuation of hand-to-mouth buying with customers willing to wait until later to purchase other than prompt delivery at current market prices. An inclination to ask for price recessions for future shipments is met with no desire on the part of mills to sell beyond June and up to that time at full market price.

TIRE FABRICS. The prices for tire fabrics are entirely out of line with the price of cotton and there has been little change in tire fabric prices during the past month. Manufacturers of tires have been placing orders to considerable extent for both immediate and future delivery.

Drills

38-inch	2.00-yard.....*yard*	$0.17½	@
40-inch	3.47-yard.....	.10⅛	@
50-inch	1.52-yard.....	.23	@
52-inch	1.90-yard.....	.18⅝	@
52-inch	2.20-yard.....	.16⅜	@
59-inch	1.85-yard.....	.18½	@ .18⅞

Ducks

38-inch	2.00-yard S. F.*yard*	.16¾	@
40-inch	1.45-yard S. F.....	.21⅜	@
72-inch	1.05-yard D. F.....	.35	@
72-inch	16.66-ounce.....	.38½	@
72-inch	17.21-ounce.....	.39¾	@

MECHANICAL

Hose and belting....*pound*		.34½	@
Specials		.38	@

TENNIS

52-inch	1.35-yard .....*yard*	.21⅝	@

Hollands

RUBBER TRADE SPECIAL R. T. 3 A.

31-inch	.....*yard*	.20	@
40-inch	.....	.25	@
50-inch	.....	.45	@

RED SEAL

36-inch	.....	.15½	@
40-inch	.....	.16½	@
50-inch	.....	.25	@

GOLD SEAL

40-inch, No. 73.....		.20¾	@
40-inch, No. 80.....		.22	@

New York Quotations

April 25, 1928

Osnaburgs

40-inch	2.35-yard .....*yard*	$0.14⅞	@
40-inch	2.48-yard	.14⅛	@
40-inch	3.00-yard	.11⅝	@
37-inch	2.42-yard	.14⅜	@

Raincoat Fabrics

COTTON

Bombazine 64 x 60....*yard*		.11¼	@
Bombazine 60 x 48.....		.10¾	@
Plaids 60 x 48.....		.12	@
Plaids 48 x 48.....		.11½	@
Surface prints 64 x 60.....		.13	@
Surface prints 60 x 48.....		.12	@
Print cloth 38½-in., 60 x 64.		.07⅝	@

Sheetings, 40-inch

48 x 48, 2.50 yard.....*yard*		.12¼	@ .12½
48 x 48, 2.85-yard.....		.10⅞	@
64 x 68, 3.15 yard.....		.11⅞	@
56 x 60, 3.60-yard.....		.09⅞	@
44 x 48, 3.75-yard.....		.08¾	@

Sheetings, 36-inch

48 x 48, 5.00 yard.....*yard*		.07	@
40 x 44, 6.15-yard.....		.05⅞	@ .06

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, karded.....*pound*			@
Peeler, karded.....		$0.46	@

BUILDER 23/11

Peeler, karded.....*pound*		.46	@

BUILDER 10/5

Peeler, karded.....*pound*		.42	@

CORD 23/5/3

Egyptian, combed ....*pound*			@
Egyptian, karded			@
Peeler, karded, 1 1/16-in.....		.45	@

CORD 23/4/3

Peeler, karded.....*pound*		.46	@

CORD 23/3/3

Peeler, karded.....*pound*		.52	@

CORD 15/3/3

Peeler, karded.....*pound*		.43	@

CORD 13/3/3

Peeler, karded.....*pound*		.42	@

LENO BREAKER

8-oz. Peeler, karded..*pound*		.46	@
10-oz. Peeler, karded.....		.46	@

CHAFER

9.5-oz. Peeler, karded.*pound*		.54	@
12-oz. Peeler, karded.....		.48	@
14-oz. Peeler, karded.....		.46	@

United States Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	January, 1928		Six Months Ending December, 1927	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	87,601,093	$30,278,444	455,326,767	$155,146,254
Balata	60,756	24,218	705,968	260,927
Jelutong or Pontianak	1,316,215	183,705	8,860,411	1,117,536
Gutta percha	335,986	86,762	1,719,774	380,044
Guayule	968,500	242,339	5,666,771	1,329,347
Rubber scrap	2,773,104	93,165	9,936,260	380,926
Totals	93,055,654	$30,908,573	482,215,951	$158,615,034
Chicle *dutiable*	974,705	$511,774	4,813,323	$2,433,349
MANUFACTURED—*Dutiable*				
Rubber belting	35,263	$16,105	298,382	$182,095
Rubber tires	304	7,117	3,640	37,381
Other manufactures of rubber	.....	124,941	.....	746,012
Totals	35,567	$148,163	302,022	$965,488

EXPORTS OF FOREIGN MERCHANDISE

RUBBER MANUFACTURES				
Crude rubber	4,454,004	$1,734,990	33,381,638	$12,283,213
Balata	42,567	18,816	95,654	39,682
Gutta percha and rubber substitutes and scrap	11,200	672	28,295	8,891
Rubber manufactures	.....	24,110	.....	150,125
Totals	4,507,771	$1,778,588	33,505,587	$12,481,911

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
India Rubber				
Reclaimed	1,986,217	$148,220	8,607,888	$695,191
Scrap and old	4,121,436	254,259	16,982,881	1,041,823
Footwear				
Boots *pairs*	71,722	153,194	660,790	1,482,072
Shoes *pairs*	171,395	138,335	1,399,637	1,278,177
Canvas shoes with rubber soles *pairs*	431,773	327,323	2,013,194	1,412,880
Rubber water bottles and fountain syringes *number*	32,216	17,545	218,413	145,016
Rubber gloves *doz. pairs*	6,965	23,177	41,070	125,420
Other druggists' rubber sundries	.....	24,119	.....	246,765
Bathing caps *doz.*	5,357	14,532	44,891	113,955
Hard rubber goods				
Electrical hard rubber goods	99,226	29,203	695,844	179,375
Other hard rubber goods	.....	30,781	.....	177,638
Tires				
Casings, automobile *number*	187,476	2,409,628	1,206,584	15,834,710
Tubes, automobile *number*	131,871	289,279	825,929	1,834,053
Other casings and tubes *number*	2,668	6,224	36,035	100,888
Solid tires for automobiles and motor trucks *number*	4,653	165,610	43,351	1,236,276
Others	181,211	41,520	1,048,623	250,546
Tire accessories	.....	106,509	.....	935,285
Rubber and friction tape	91,328	28,239	706,080	199,898
Belting	528,729	266,163	2,578,760	1,383,355
Hose	638,524	234,073	3,559,966	1,298,583
Packing	205,690	96,733	1,191,542	557,380
Soles and heels	101,259	123,384	.....	823,530
Thread	133,735	153,212	741,050	906,870
Rubber bands and erasers	65,345	43,547	464,252	325,157
Other rubber manufactures	.....	175,786	.....	1,132,192
Totals	.....	$5,299,995	.....	$33,717,035
Rubber toys and balls	38,134	$43,391	291,941	$409,391
Rubber balloons *gross*	.....	$5,723	.....	$87,767

Crude Rubber Imports by Customs Districts

	*February, 1928		Two Months Ended *February, 1928	
	Pounds	Value	Pounds	Value
Massachusetts	3,489,072	$1,091,062	9,148,164	$2,908,247
New York	65,808,590	24,478,524	144,260,906	51,829,545
Philadelphia	1,396,558	392,782	1,396,558	392,782
Maryland	1,004,380	379,289	2,294,537	775,038
Los Angeles	3,031,752	1,154,157	3,937,905	1,451,371
San Francisco	42,336	14,376	112,908	37,339
Oregon	11,300	4,302	33,700	11,803
Ohio	454,327	181,594	1,542,730	525,225
Wisconsin	168,000	67,569	280,000	110,749
Totals	75,406,315	$27,763,655	163,007,408	$58,042,099

* Including latex, dry rubber content.

CRUDE RUBBER, INCLUDING LATEX, RANKS SECOND IN VALUE among the imports during 1926 and 1927, according to *Our World Trade*. The value of crude rubber imports in 1927 was $339,875,000, a decrease of $165,943,000, or 33 per cent, from 1926. The volume, however, was 3 per cent greater and reached the high mark of 954,817,000 pounds.

Dominion of Canada Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	December, 1927		Twelve Months Ended December, 1927	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc	5,156,384	$1,918,038	59,145,951	$22,623,511
Rubber recovered	711,595	61,074	9,747,971	974,229
Rubber, powdered and rubber or gutta percha scrap	572,090	37,094	8,229,350	517,573
Balata	907	444	6,176	2,933
Rubber substitutes	92,441	18,883	1,040,994	150,222
Totals	6,533,417	$2,035,533	78,170,442	$24,268,468
PARTLY MANUFACTURED				
Hard rubber sheets and rods	25,083	$10,846	204,781	$89,870
Hard rubber tubes	.....	416	.....	12,620
Rubber thread not covered	21,406	24,873	220,584	287,118
Totals	46,489	$36,135	425,365	$389,608
MANUFACTURED				
Belting	.....	$8,093	.....	$130,989
Hose	.....	12,102	.....	172,732
Packing	.....	4,936	.....	52,901
Boots and shoes *pairs*	32,422	45,262	110,488	202,801
Clothing, including waterproofed	.....	22,033	.....	482,461
Gloves	.....	1,000	.....	18,236
Hot water bottles	.....	4,510	.....	27,104
Tires, solid *number*	17	764	491	27,873
Tires, pneumatic *number*	555	9,202	46,042	292,354
Tires, tubes *number*	2,763	5,309	44,144	88,711
Elastic, round and flat	.....	12,524	.....	188,779
Mats and matting	.....	3,116	.....	31,291
Cement	.....	2,620	.....	88,853
Golf balls *dozen*	488	1,613	47,547	192,660
Heels, rubber *pairs*	54,473	3,575	900,432	52,849
Other rubber manufactures	.....	93,374	.....	1,278,420
Totals	.....	$230,033	.....	$3,329,014
Totals, rubber imports	.....	$2,301,701	.....	$27,987,090

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

	December, 1927		Twelve Months Ended December, 1927	
UNMANUFACTURED	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
Crude and waste rubber	$25,224	.....	$273,639	.....
Totals	$25,224	.....	$273,639	.....
MANUFACTURED				
Belting	$51,949	.....	$500,935	.....
Canvas shoes with rubber soles	208,503	.....	3,835,443	.....
Boots and shoes	211,403	.....	1,865,672	.....
Clothing, including waterproofed	651	.....	24,164	.....
Hose	25,850	.....	256,696	.....
Tires, casings	1,244,578	.....	16,919,950	.....
Inner tubes	215,142	.....	3,143,901	.....
Solid	29,225	.....	438,926	.....
Other rubber manufactures	71,354	$2,844	748,491	$66,615
Totals	$2,058,655	$2,844	$27,734,178	$66,615
Totals, rubber exports	$2,083,879	$2,844	$28,007,817	$66,615

London Stocks, February, 1928

	Landed for Feb.	Delivered for Feb.	Stocked February 29		
LONDON	Tons	Tons	1928 Tons	1927 Tons	1926 Tons
Plantation	6,075	9,626	62,827	58,622	9,863
Other grades	.....	6	89	126	92
LIVERPOOL					
Plantation	†696	489	†2,343	†2,344	†650
Total tons, London and Liverpool	6,771	10,121	65,259	61,092	10,605

†Official returns from the six recognized public warehouses.

Fish Dons Rubber Collar

A peculiar fish, which at first hearing seems just another "fish story," was caught recently at one of the lower river islands in the Alleghany. It was of the variety known as a Stone poker and was wearing a rubber collar. Closer examination revealed the fact that the fish must have inserted its head in a fruit jar and on withdrawing carried away the rubber ring from the top of the jar. As the fish grew the rubber expanded but not sufficiently to keep pace with the fish's growth, so that the rubber became inbedded in the flesh giving it its peculiar appearance.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

	Cases
March 14. By "Fairfield City," Far East.	
H. A. Astlett & Co.	711
General Rubber Co.	3,480
The Meyer & Brown Corp.....pkgs.	343
H. Muehlstein & Co., Inc.	275
March 15. By "Pyrrhus," Far East.	
H. A. Astlett & Co.	1,849
Baird Rubber & Trading Co., Inc.	250
General Rubber Co.	4,144
Littlejohn & Co., Inc.	4,604
The Meyer & Brown Corp.....pkgs.	879
H. Muehlstein & Co., Inc.	66
Poel & Kelly, Inc.	50
Raw Products Co.	325
March 16. By "Cabo Mayor," Europe.	
Littlejohn & Co., Inc.	100
March 19. By "Blommersdyk," Far East.	
H. A. Astlett & Co.	1,836
Baird Rubber & Trading Co., Inc.	150
General Rubber Co.	3,414
Hood Rubber Co.	*134
Littlejohn & Co., Inc.	3,113
The Meyer & Brown Corp.....pkgs.	1,144
The Meyer & Brown Corp.....pkgs.	*68
H. Muehlstein & Co., Inc.	1,287
Poel & Kelly, Inc.	*137
Rogers Brown & Crocker Bros., Inc.	344
Charles T. Wilson Co., Inc.	615
March 19. By "Euryades," Far East.	
H. Muehlstein & Co., Inc.	580
March 19 By "Minnetonka," London.	
Baird Rubber & Trading Co., Inc.	540
General Rubber Co.	2,495
Littlejohn & Co., Inc.	1,190
The Meyer & Brown Corp.....pkgs.	1,716
Charles T. Wilson Co., Inc.	456
March 20. By "Nortonian," London.	
Baird Rubber & Trading Co., Inc.	*287
Baird Rubber & Trading Co., Inc.	1,489
Littlejohn & Co., Inc.	1,709
The Meyer & Brown Corp.....pkgs.	433
Poel & Kelly, Inc.	529
March 20. By "Pres. Wilson," Far East.	
H. A. Astlett & Co.	3,206
Baird Rubber & Trading Co., Inc.	610
General Rubber Co.	3,975
Haldane & Co., Inc.	360
Hood Rubber Co.	*151
Littlejohn & Co., Inc.	5,006
The Meyer & Brown Corp.....pkgs	2,573
H. Muehlstein & Co., Inc.	495
Poel & Kelly, Inc.	990
Rogers Brown & Crocker Bros., Inc.	900
Rogers Brown & Crocker Bros., Inc.	*250
Charles T. Wilson Co., Inc.	426
March 21. By "Egremont," Far East.	
Haldane & Co., Inc.	100
Littlejohn & Co., Inc.	50
The Meyer & Brown Corp.....pkgs.	78
March 21. By "Speybank," Far East.	
General Rubber Co.	58
Littlejohn & Co., Inc.	1,616
March 22. By "American Banker," Far East.	
Rogers Brown & Crocker Bros., Inc.	101
March 22. By "Pres. Taft," Far East.	
General Rubber Co.	467
The Meyer & Brown Corp.....pkgs.	250
Poel & Kelly, Inc.	†700
March 24. By "Volendam," Europe.	
The Meyer & Brown Corp.....pkgs.	370
March 25. By "Ascania," London.	
Baird Rubber & Trading Co., Inc.	595
General Rubber Co.	5,685
Littlejohn & Co., Inc.	2,116
The Meyer & Brown Corp.....pkgs.	374
Poel & Kelly, Inc.	818
March 26. By "Malakuta," Far East.	
H. A. Astlett & Co.	168
General Rubber Co.	2,130
Hood Rubber Co.	*135
The Meyer & Brown Corp.....pkgs.	112
Charles T. Wilson Co., Inc.	244
March 27. By "American Merchant," Europe.	
Littlejohn & Co., Inc.	525
H. Muehlstein & Co., Inc.	252
March 28. By "Carmania," Liverpool.	
Baird Rubber & Trading Co., Inc.	153
The Meyer & Brown Corp.....pkgs.	195
March 28. By "City of Bedford," Far East.	
H. A. Astlett & Co.	1,069
Baird Rubber & Trading Co., Inc.	1,010
General Rubber Co.	3,729
Haldane & Co., Inc.	490
Littlejohn & Co., Inc.	1,452
The Meyer & Brown Corp.....pkgs.	784
The Meyer & Brown Corp.....pkgs.	*200
H. Muehlstein & Co., Inc.	333
Poel & Kelly, Inc.	750
Raw Products Co.	300
Rogers Brown & Crocker Bros., Inc.	252
Charles T. Wilson Co., Inc.	832
March 28. By "Clanskene," Far East.	
H. A. Astlett & Co.,	68
The Meyer & Brown Corp.....pkgs.	100
March 28. By "Japanese Prince," Far East.	
H. A. Astlett & Co.	820
Baird Rubber & Trading Co., Inc.	908
General Rubber Co.	6,167
Haldane & Co., Inc.	260
Littlejohn & Co., Inc.	3,525
The Meyer & Brown Corp.....pkgs.	1,721
H. Muehlstein & Co., Inc.	488
Poel & Kelly, Inc.	*74
Poel & Kelly, Inc.	150
Raw Prdoucts Co.	220
Rogers Brown & Crocker Bros., Inc.	1,311
Charles T. Wilson Co., Inc.	200
March 28. By "Minnesota," London.	
Charles T. Wilson Co., Inc.	2,084
March 29. By "Ixion," Far East.	
H. A. Astlett & Co.	995
Baird Rubber & Trading Co., Inc.	700
General Rubber Co.	3,116
Haldane & Co., Inc.	50
Littlejohn & Co., Inc.	1,489
The Meyer & Brown Corp.....pkgs.	1,560
H. Muehlstein & Co., Inc.	460
Poel & Kelly, Inc.	1,250
Raw Products Co.	150
Rogers Brown & Crocker Bros., Inc.	259
Charles T. Wilson Co., Inc.	250
March 30. By "Seminole," Far East.	
H. A. Astlett & Co.	56
General Rubber Co.	280
Haldane & Co., Inc.	200
The Meyer & Brown Corp.....pkgs.	106
Charles T. Wilson Co., Inc.	232
March 31. By "City of Shanghai," Far East.	
H. A. Astlett & Co.	70
Hood Rubber Co.	*42
Littlejohn & Co., Inc.	2,312
Charles T. Wilson Co., Inc.	184
April 2. By "Alaunia," London.	
Baird Rubber & Trading Co., Inc.	901
Haldane & Co., Inc.	250
The Meyer & Brown Corp.....pkgs.	887
H. Muehlstein & Co., Inc.	41
Poel & Kelly, Inc.	2,079
April 2. By "Cedric," London.	
Baird Rubber & Trading Co., Inc.	88
April 3. By "Megantic," London.	
Baird Rubber & Trading Co., Inc.	477
General Rubber Co.	2,794
The Meyer & Brown Corp. .....pkgs.	526
Poel & Kelly, Inc.	1,027
Charles T. Wilson Co.	537
April 3. By "Pres. Van Buren," Far East.	
H. A. Astlett & Co.	790
Baird Rubber & Trading Co., Inc.	200
General Rubber Co.	1,590
Haldane & Co., Inc.	300
Hood Rubber Co.	*43
Littlejohn & Co., Inc.	725
The Meyer & Brown Corp.....pkgs.	470
H. Muehlstein & Co., Inc.	110
Poel & Kelly, Inc.	1,900
Poel & Kelly, Inc.	*250
Raw Products Co.	50
Rogers Brown & Crocker Bros., Inc.	451
Charles T. Wilson Co., Inc.	489
April 4. By "American Farmer," London.	
Baird Rubber & Trading Co., Inc.	382
General Rubber Co.	1,537
Poel & Kelly, Inc.	1,549
Charles T. Wilson Co., Inc.	901
April 4. By "Bali," Far East.	
H. A. Astlett & Co.	1,314
Baird Rubber & Trading Co., Inc.	76
General Rubber Co.	5,367
Hood Rubber Co.	*338
Littlejohn & Co., Inc.	2,068
The Meyer & Brown Corp.....pkgs.	721
H. Muehlstein & Co., Inc.	450
Poel & Kelly, Inc.	84
Raw Products Co.	172
Rogers Brown & Crocker Bros., Inc.	796
Charles T. Wilson Co., Inc.	100
April 4. By "London Corporation," London.	
Baird Rubber & Trading Co., Inc.	220
General Rubber Co.	516
Littlejohn & Co., Inc.	793
The Meyer & Brown Corp.....pkgs.	629
April 5. By "Clan McInnes," Far East.	
H. A. Astlett & Co.	23
April 6. By "Malakand," Far East.	
General Rubber Co.	560
April 6. By "Silver Oak," Far East.	
H. A. Astlett & Co.	†311
April 7. By "Pres. Jefferson," Far East.	
General Rubber Co.	532
Poel & Kelly, Inc.	†500
April 7. By "Wray Castle," Far East.	
H. A. Astlett & Co.	317
Baird Rubber & Trading Co., Inc.	1,150
General Rubber Co.	3,805
Haldane & Co., Inc.	30
Littlejohn & Co., Inc.	5,601
The Meyer & Brown Corp.....pkgs.	1,651
H. Muehlstein & Co., Inc.	260
Poel & Kelly, Inc.	25
Poel & Kelly, Inc.	*166
Rogers Brown & Crocker Bros., Inc.	250
Charles T. Wilson Co., Inc.	1,056
April 9. By "Albertic," Far East.	
The Meyer & Brown Corp.....pkgs.	43
Poel & Kelly, Inc.	22
April 9. By "Atreus," Far East.	
H. A. Astlett & Co.	1,718
Baird Rubber & Trading Co., Inc.	800
General Rubber Co.	2,041
Haldane & Co., Inc.	150
Hood Rubber Co.	*66
Littlejohn & Co., Inc.	3,145
The Meyer & Brown Corp.....pkgs.	1,679
The Meyer & Brown Corp.....pkgs.	*282
H. Muehlstein & Co., Inc.	431
Poel & Kelly, Inc.	*257
Poel & Kelly, Inc.	250
Raw Products Co.	228
Rogers Brown & Crocker Bros., Inc.	475
Charles T. Wilson Co., Inc.	50
April 9. By "Caronia," Liverpool.	
Baird Rubber & Trading Co., Inc.	274
Littlejohn & Co., Inc.	216
April 9. By "Minnekahda," London.	
Baird Rubber & Trading Co., Inc.	245
General Rubber Co.	532
April 9. By "Missouri," London.	
Baird Rubber & Trading Co., Inc.	*185
Hood Rubber Co.	*402
April 9. By "Steel Worker," Far East.	
The Meyer & Brown Corp.....pkgs.	330
April 10. By "American Trader," Europe.	
The Meyer & Brown Corp.....pkgs.	665
H. Muehlstein & Co., Inc.	165
April 10. By "Ansonia," Europe.	
The Meyer & Brown Corp.....pkgs.	514
H. Muehlstein & Co., Inc.	121
April 11. By "Steel Traveller," Far East.	
H. A. Astlett & Co.	979
Baird Rubber & Trading Co., Inc.	308
General Rubber Co.	3,892
Hood Rubber Co.	318
Littlejohn & Co., Inc.	1,296
The Meyer & Brown Corp.....pkgs.	1,300
The Meyer & Brown Corp.....pkgs.	*100
H. Muehlstein & Co., Inc.	287
Poel & Kelly, Inc.	150
Poel & Kelly, Inc.	*63
Rogers Brown & Crocker Bros., Inc.	374
Charles T. Wilson Co., Inc.	559
April 13. By "Tiradentes," Far East.	
General Rubber Co.	158
Littlejohn & Co., Inc.	53
Raw Products Co.	539
April 14. By "Medon," Far East.	
Haldane & Co., Inc.	50
Hood Rubber Co.	*43
Littlejohn & Co., Inc.	2,053
The Meyer & Brown Corp.....pkgs.	793
H. Muehlstein & Co., Inc.	187
Poel & Kelly, Inc.	*127
Poel & Kelly, Inc.	51
Raw Products Co.	100
Rogers Brown & Crocker Bros., Inc.	389
Charles T. Wilson Co., Inc.	512
April 14. By "Silver Maple," Far East.	
Hood Rubber Co.	*200
April 16. By "Norwegian," London.	
Hood Rubber Co.	*92

* Arrived at Boston.
† Arrived at Los Angeles.

Guayule

	Cases
March 21. By "Monterey," Mexico. Continental Rubber Co. of New York	1,631
March 23. By "Antilla," Mexico. Continental Rubber Co. of New York	560
March 28. By "Panuco," Mexico. Continental Rubber Co. of New York	1,850
April 3. By "Mexico," Mexico. Continental Rubber Co. of New York	1,322
April 4. By "Norden," Mexico. Continental Rubber Co. of New York	1,620

Balata

	Cases
March 27. By "Sheridan," Brazil. General Rubber Co.	65

Rubber Latex

March 15. By "Fairfield City," Far East. General Rubber Co.	gallons 28,788
April 6. By "Wray Castle," Far East. General Rubber Co.	gallons 38,110

Africans

	Cases
March 16. By "Eastern Dawn," Antwerp Hood Rubber Co.	*274
April 10. By "Collamer," Europe. Littlejohn & Co., Inc.	73
April 11. By "Westphalia," Europe. Littlejohn & Co., Inc.	178
April 16. By "Norwegian," London. Hood Rubber Co.	*788

*Arrived at Boston.

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
March 15. By "Hubert," Brazil.					
H. A. Astlett & Co.	91	...	292	146	...
General Rubber Co.	436	10	15	...	...
March 25. By "Sardinian Prince," Bolivia.					
Paul Bertuch & Co., Inc.	146	...	...	...	...
March 27. By "Sheridan," Brazil.					
H. A. Astlett & Co.	405	...	115	65	...
Paul Bertuch & Co., Inc.	190	66	166	354	...
General Rubber Co.	457	139	297	1	...
Littlejohn & Co., Inc.	820	18	362	24	...
The Meyer & Brown Corp., pkgs.	1,274	...	...	27	...
April 10. By "Justin," Brazil.					
Paul Bertuch & Co., Inc.	139	...	...	...	...
General Rubber Co.	188	7	479	29	3
Littlejohn & Co., Inc.	311	7	89	...	...
The Meyer & Brown Corp., pkgs.	...	...	...	8	...

United States Crude and Waste Rubber Imports for 1928 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicoba and Matto Gresso	Total 1928	Total 1927	Balata	Miscellaneous	Waste
January ... tons	43,668	1,580	433	126	435	1	46,243	45,827	120	1,292	248
February	27,852	756	125	125	587	..	29,445	27,701	58	517	310
March	37,545	2,430	72	92	755	..	40,894	35,054	154	741	830
Total, three months, 1928...tons	109,065	4,766	630	343	1,777	1	116,582	.....	332	2,550	1,388
Total, three months, 1927. tons	101,086	5,222	688	413	1,173	..	.....	108,582	307	2,599	2,280

Compiled from statistics supplied by the Rubber Association of America, Inc.

Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

High Pressure Pneumatic Casings

	Cord			Fabric		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1927	.....	21,527,278	21,733,962	.....	766,581	1,198,549
1928						
January	3,605,064	1,684,750	1,496,047	200,322	56,218	60,404
February*	4,394,561	1,697,498	1,244,812	222,655	53,220	28,719

High Pressure Inner Tubes

	Inventory	Production	Total Shipments
1927	.....	27,398,535	29,528,108
1928			
January	5,328,071	1,669,894	2,014,744
February	5,941,626	*1,949,539	1,470,668

Balloon Inner Tubes

	Inventory	Production	Total Shipments
1927	.....	25,718,529	25,143,821
1928			
January	4,408,235	2,411,124	2,539,535
February	5,046,021	3,221,756	2,602,362

Balloon Casings

	Inventory	Production	Total Shipments
1927	.....	26,037,452	25,111,903
1928			
January	3,656,537	2,377,299	2,489,391
February*	4,173,493	3,021,548	2,500,013

Solid and Cushion Tires

	Inventory	Production	Total Shipments
1927	.....	558,030	558,007
1928			
January	161,379	36,279	33,797
February*	156,790	36,328	38,715

Cotton and Rubber Consumption
Casings, Tubes, Solid and Cushion Tires

	Cotton Fabric Pounds	Crude Rubber Pounds
1927	177,979,818	463,661,466
1928		
January	16,039,819	43,709,438
February	16,923,607	46,468,050

*As of February 29, 1928.
Rubber Association figures representing 75 per cent of the industry.

Rubber in Hainan

Hainan is situated near Indo-China and has a total area of 13,000 square miles. Except in the hilly regions, the climate is warm and humid, though in summer the island is visited by wind and storms. The central regions are occupied by the Five Finger range of mountains, the highest peak of which is 6,000 feet.

It is known that rubber was introduced here upwards of fifteen years ago, but owing to the abnormal conditions prevailing, it is difficult to obtain accurate data concerning the production of rubber. However, it is learned that one company which began operations when rubber planting was first introduced here, at one time had some 3,200 trees in tapping. This firm, the Quechik Co., began collecting latex when the trees were five years old and obtained a total of 506 catties (667 pounds) of latex from these trees in the first year, 1,800 in the third year and 3,000 in the fourth year.

The Commissioner of Customs at Kiungchow, the capital of Hainan, reported in August, 1927, that according to information obtained from the Chinese, a wealthy native brought a quantity of seeds and plants to the island in 1912 and started a plantation in the Ting An district and soon after several others followed his example. Rubber trees have been planted in the districts of Ting An Kiung Tung and Loh Hui along the Kacheck river. It seems that the methods of preparation are fairly modern at present; the rubber being finished in sheet form and the latex coagulated with acetic acid, although sometimes carbolic acid is also used. What amount of rubber is produced is not known, but the article is shipped by native craft from the coast to other ports, only a small proportion going through the seaport of the island, Hoihow.

From another source, it is reported that the K'in Hing Co., near Nodoa, Hainan, had about 10,000 rubber trees in bearing in 1922-23 and were producing a good grade of rubber. Besides these, the firm had 25,000 more trees approaching the tapping stage. Lack of satisfactory labor and transportation facilities were their chief problems. The labor situation is now worse than ever, but as a road between Nodoa and Hoihow is now under construction, transportation troubles will soon be eased.

Not only here, but over the whole island, miles of new roadways open to motor traffic have been opened up of late, and there are now about 365 motor cars in operation.